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The Competition for the Battersea Polytechnic Institute.

BY the courtesy of the Goldsmiths' Company the drawings submitted in the final competition for the Battersea Polytechnic by the six selected architects are, during this week, on exhibition in the Hall of the Company in Foster-lane, Cheapside. The competition was divided into two sections, as is now so usual, and the preliminary drawings were drawn to a one-sixteenth scale; the final drawings were expected to be a development of the previous scheme submitted, without material alteration, but elaborated to a one-eighth scale. The six selected architects were Mr. John Belcher, Messrs. Henman & Harrison, Mr. E. W. Mountford, Mr. Sidney Smith, Messrs. Roger Smith, Son, & Gale, and Mr. J. Osborne Smith. Of these Mr. Mountford was awarded the first place by Mr. Rowland Plumbe, the committee's assesor, and he will, we understand, carry out the work. Illustrations of his design appeared in our issue of March 28.

There are also exhibited, with these competition drawings, sets of drawings to show what accommodation is being made for the other two South London Polytechnics. New Cross and the Borough-road were the localities chosen, and the Goldsmiths' Company undertook to provide the former neighbourhood with their Institute, and to bear the whole expense; for this purpose, the recently-vacated but substantial buildings of the Royal Naval School, with playground adjoining, have been acquired and will be altered and adapted by their architect, Mr. J. W. Penfold. The Borough-road Institute will be housed in the old buildings of the British and Foreign School Society, which have been acquired by the committee. The plans exhibited, which have been prepared by Mr. Rowland Plumbe, show the alterations to those buildings which are proposed, and also several additional buildings, the erection of which depends mainly upon the receipt of the necessary funds.

The site of the Battersea Institute, in the Battersea Park-road, is at the south-west corner of the land occupied by the Albert Palace; it is now bounded on two sides by existing roads, and will eventually be surrounded by roads; the area exceeds two acres in extent and is oblong in shape. The strongest points in our opinion in the selected drawings of Mr. E. W. Mountford are the simplicity of the plan and the perfectly straight, well-lighted corridors, in every case at right angles to one another. Each department appears to be easily approached from any other portion of the buildings, whilst each one appears to be capable of being shut off and used as a separate building, without in any way injuring its own convenience or interfering with the department adjacent, which may be in use at the same time for an entirely different purpose. The principal entrance is in the centre of the Battersea Park-road frontage, and leads through an entrance-hall to a corridor running right and left. This corridor is perfectly straight, and is lighted at each end and also amply lighted at the side from two courtyards, about 50 ft. by 60 ft., which give light and air to the centre of the block. The staircase is immediately opposite the principal entrance, and another well-lighted corridor runs from opposite the entrance to the back where it forms an entrance to the Technical Department, which occupies the north-west corner. On the right of the principal entrance, the members' committee-room adjoins the rooms of the men's social department, which occupy the south-west front. The adjacent refreshment-room for men faces the courtyard on the other side of the corridor, and is conveniently arranged in contact with the kitchen, which is also contiguous to the women's dining-room, though at the same time cut off from it. The women's department occupies the west front; spacious cloak-room and lavatories are reached by a separate entrance. The women's gymnasium occupies a separate block adjoining. A staircase leads to the women's club-room on the first floor, where the women's class-rooms are also placed. The Technical Department is a one-story building, occupying the north-west angle; a corridor divides the workshops, some of which derive their entire light from the roof, whilst the remainder have side light from the west and north. The corridor referred to continues in a straight line, and divides the swimming-bath on the north from the gymnasium on the south; both of these derive their light from the roof, though opportunities exist for side light were it required. The large hall occupies the east front, with the platform at the north end; a private entrance gives access to the artistes' retiring-room, but in addition to this there are three good entrances. At the south end two cloak-rooms are provided.

The first-floor shows the band-room, with four music-rooms overlooking each courtyard, at the back of the staircase in the centre of the block. The class-rooms are conveniently arranged in the front block, on the south of the corridor. From the first to the second floors three staircases give access to the laboratories and other rooms, which seem to be suitably arranged. The elevations will probably be more pleasing in execution, and create a more favourable impression, than is produced by the perspective drawing which is submitted. Putting other considerations aside for the moment, the elevations submitted by Messrs. Henman & Harrison show much dignity of treatment and deserve much credit; the reason they do not occupy a better position in the competition will be stated below. Taking the plan into consideration, the design submitted by Messrs. Roger Smith, Son, & Gale, and which forms part of the illustrations to our present issue, has many very good points. The corridors are straight and at right-angles, and, with one or two exceptions, well lighted. The position of the large hall at the east-end, in which this and the successful design agree, is entitled to place this design above the other competitors, though the acoustic advantages of the elliptical shape of the hall would probably be outbalanced by the difficulties and expense of construction. The architects' intention seems to have been to dispense with exterior ornament as much as possible for economy's sake, and the plainness and severity of the elevations must be, therefore, attributed to this desire. The treatment of the tower in its upper portions is capable of much improvement. The question of future extension has received every attention in this design, and the space avail-

able on the site is larger than in any of the other designs. The principal entrance leads into a large inner hall, with corridor right and left; a top-lighted corridor also runs from front to back, where it becomes the entrance to the technical department. The physical department occupies the north-west corner, and here the swimming-bath, the gymnasium, and women's gymnasium are placed side by side, with their axes pointing east and west. The women's social department occupies the south-west corner, whilst the men's social-rooms are immediately adjacent to the entrance hall. The music-room and dance-rooms on the first floor require to be somewhat more cut off from the class-rooms adjoining, and the lavatory accommodation seems to be somewhat restricted. With these exceptions the upper floor seems to have been carefully arranged. The interior of the hall, with its double balconies and columns from the ground to the roof, might have been treated with much more grace with advantage.

The designs of Mr. Sidney Smith, represented by a good set of drawings, appear to have been prepared with great care and method.* The ground-plan shows the principal entrance in the centre, with a corridor running right and left, another corridor, at right-angles to the last, runs straight through to the hall, which is placed in the centre of the north front, with its axis east and west; the corridor is carried round the hall, to which access is given by many doors to the hall. A separate entrance is provided in the centre of the back road, with ample cloak-rooms on each side, and much has been done to make this plan complete, though the best position for the hall is undoubtedly the east end of the site. The gymnasium and swimming-baths occupy the north-west corner, whilst the technical department is contained in a one-story building in the north-east portion of the site. Covered ways connect this and the other blocks. The band and music rooms have been accommodated in a separate building at the east end of the front block, which is a distinct variation on the other methods adopted by the competitors. The whole of the upper floors have lecture and class rooms carefully disposed on either side of the corridor, which is nevertheless well lighted. The elevations have been kept very plain in character, and are not the most satisfactory part of the design.

Messrs. Henman and Harrison submit drawings which show a carefully-thought-out design. The position of the hall is unfortunate, as the principal approach would be through the main entrance to the front block. The corridors also are not straight in every case, and at places would be insufficiently lighted. A corridor is carried round three sides of the hall in a manner similar to that described for the last design. This is a very good arrangement, and is known to have been used with convenience and effect. The swimming-bath and gymnasium, lying north and south, and the technical schools occupy respectively the north-west and north-east corners of the site. The men's social quarters are in the south-west, and the women's in the south-east, with their gymnasium near at hand; a separate staircase leads to the women's cooking department and class-rooms on floor above, and this appears to be a good arrangement. The first floor is reached by two staircases, which are intended to serve both the front block and the gallery to the hall, an arrangement which cannot be commended. The refreshment room appears to be an inconvenient distance from the men's club-rooms. The elevations already alluded to are designed with much grace. The three spiked turrets must be excepted, as they could be modified with advantage.

The designs of Mr. J. Osborne Smith do not appear to grapple with the problems of the design with much success. The corridors are somewhat intricate, and the main entrance is made to serve for the hall as well as the main block. The hall occupies a bad position on the central axis of the site, and, though an entrance is provided from the back road, it merely gives access to the artists' rooms behind the platform. The exits and retiring-rooms also could be better arranged. The technical schools and physical department are placed respectively in the north-west and north-east of the site. A variation has been made by placing two mechanical drawing-rooms adjacent to the technical schools, instead of on the upper floors, and this seems a desirable innovation. The arrangement of the upper floors present few difficulties, though the staircases,—designed to be jointly used for the gallery of the hall and the front block,—cannot be entirely approved. The elevations are distinctly poor in character, the proportions being unhappy in many instances.

The last of the designs is by Mr. Belcher. The ground-plan shows a central entrance, with corridors right and left. A feature has been made of the staircase, and much space devoted to it. Opposite the main entrance a corridor runs straight through to the back, where it forms the entrance to the band and music rooms. The swimming-bath and gymnasium face the back road on either side of the centre, whilst the technical schools and the large hall face the west and east respectively. The eccentricities of the elevations are such as to discount the many good points of the plan. A little more time might have been well spent on the perspective drawing; half-hour sketches are not usually submitted in competitions, and it would be a pity to encourage the practice.

Judging from the designs exhibited, there seems every reason for agreeing with the assessor's award. It is to be regretted that the preliminary designs of the selected architects were not also exhibited. In the case of double competitions, which are becoming more and more common, where preliminary and final drawings are submitted, the exhibition of the preliminary drawings of the selected few with the final drawing might be made the custom with advantage to all.

* Mr. Sidney Smith wishes us to mention that the design was prepared by Mr. Thos. W. Aldwinckle in conjunction with him, and should have been so described on the drawings.

SEPULCHRAL MONUMENTS OF ESSEX.

THE only complaint we have to make against Mr. Chancellor's book of the Sepulchral Monuments of Essex,* is its great and unwieldy bulk. This is partly the result of the sumptuously wide margin employed, which will raise its value in the estimation of book lovers who have plenty of space in their libraries, but would seem rather unfavourable to its more general acceptance. However, it is a kind of collection more attractive to wealthy archæologists than to the general public, and certainly would have a highly respectable appearance in the library of an Essex proprietor or rector, which is probably the kind of *milieu* for which it is mainly intended.

The author's original intention was to collect drawings of the monuments, to be published with a brief architectural description; and for this no doubt architects would have been more grateful than for this genealogical tome. The archæological and heraldic element appears, however, to have grown in the course of the preparation of the work, till it is now rather a collection of annals of old Essex families, accompanied by illustrations of their burial-places. We must confine ourselves here to the architectural features of the latter.

The De Vere monuments at Hatfield Broad-oak and Colne Priory Churches are among the oldest in the book, as the De Veres were, according to the author, the oldest and most powerful family in Essex. These are tombs of the thirteenth and fourteenth centuries, in the common mediæval form of an altar-like erection with the figure reposing on the top, and canopied niches with small figures at the sides. The monument to the fifth Earl of Oxford, on Plate II., is especially rich in the small and delicate foliated work on the sides. The design on the long side consists of three wide ogee-headed niches, crocketed and foliated, with miniature vaulting behind, alternating with four narrow niches with high triangular heads and finials, which are or have been occupied by small figures, not all of them remaining. The contrast between the wide open arches and the narrow niches with figures is charming as a bit of miniature architectural design. The later tomb of the eighth earl (1371) is far inferior in architectural design, thin and wiry in its lines; it has an unbroken series of low foliated arches under each of which stand two odd little doll-like figures, all of which remain except one. The tomb of the eleventh earl (1415), and that of his wife, is better in design, it has five niches with angels holding armorial tablets, divided by four-panelled piers; the recumbent figures are finely executed.

The Marney monuments follow, the rich canopied monument at Layer Marney church being an interesting contrast with the mediæval ones of the De Veres. Here we have the side of the tomb treated with classic richly ornamented balusters alternating with square panels, the mouldings enriched with classic ornaments and the centre of each filled with an elaborate wreath enclosing a small shield. The effect is richer than in the Gothic examples, but it is less truly architectural in character. The treatment of the "bedstead" canopy is very rich, but it is not improved by the curious nondescript ornamental erections along the top.

The Mildmay tomb at Chelmsford, one of the two of which, by the permission of author and publisher, we give reduced reproductions in this number (see lithograph), is of very peculiar design, the author says "quite unique," though we rather think we have seen something like it in another county. It is because of its unusual design that we have selected it for illustration; perhaps it is not very admirable architecturally. The strap work in the midst of which is the inscription tablet is a most unmeaning form of ornament; its best claim can be only that it "looks neat," and fills up an otherwise plain space which the artist does not seem to have quite known what to do with; the double curved and fluted top has a curious kind of suggestion of a gill heating apparatus about it. The author states that examination shows this upper part to be an after-thought, as it is different in workmanship from the lower; and certainly the detail seems of different date. The date 1571 on the upper part may therefore refer to the date on which this abnormal erection was added. The monument is to Thomas Mildmay and Avice his wife, the latter of whom died in 1557, and nine years after, according to the Latin inscription, "the unrelenting king of terrors triumphed over Thomas." The other monument we have illustrated represents a typical form of monument often recurring in some parts of England in the Renaissance period, a figure kneeling sideways beneath a canopy supported by classical columns. It is not an uncommon form in Norfolk. The date of this is just at the end of the sixteenth century, as the subject of it, Mrs. Southcotte of Witham, *née* Waldegrave, died in 1598. There is considerable delicacy in the details, and the figure is pleasing in its simple and unaffected attitude. The curious piece of filigree work at the top, supporting the shield, is one of the many odd examples of the kind of flourish which the Renaissance designers of tombs in England made use of to fill up spaces or to form finials; their vagaries are numerous, and certainly not creditable to the taste of the day, though they are interesting as memorials of it.

The Bourchier tomb in Halstead Church,

* The Ancient Sepulchral Monuments of Essex; a record of interesting tombs in Essex Churches, and some account of the persons and families connected therewith, with nearly two hundred illustrations. By Frederic Chancellor, Architect. Chelmsford: Durant & Co. 1890.

probably a little after 1400, is, as the author says, a beautiful composition of its kind, though a little thin and weak in detail. It is a canopy tomb against the south wall, very complete and harmonious in design. The side of the tomb is decorated with a series of richly-cusped square panels each containing a shield; an early Tudor cusped arch forms the canopy, with a deep band over of panels with shields, with a smaller band of quatrefoils above. The angle shafts are carried up to form octagonal finials standing above the line of finish of the monument. There is a completeness and refinement about the whole which renders it a very interesting example of the late Gothic type of monument. The Bourchier tomb in Little Easton church is another example of late Gothic work of considerable interest, richer indeed than the one just mentioned, but not so unusual and refined in type. This latter is a canopy tomb standing free in the usual manner, under one of the arches of the choir. The Maynard monument in the same church, early seventeenth century, is a significant contrast to the two Gothic ones. It seems a reminiscence of the Gothic altar form of tomb, decorated at the sides with the figures of the children of the pair who are buried there; absurd stiff little figures kneeling in a row—

> "As if they did intend
> For past transgressions to atone,
> By saying endless prayers in stone."

They are not worse executed than some of the Mediæval figures, but totally destitute of dignity or solemnity,—mere puppets. The inscription tablet above, on the wall, has no architectural connexion with the tomb; it is stuck against the wall, an Ionic pilaster on either side, coats of arms blazoned as finials over the cornice, and the centre crowned with the grotesque emblem of a winged skull, a death's-head cherubim! Truly a descent from the Mediæval feeling in monuments.

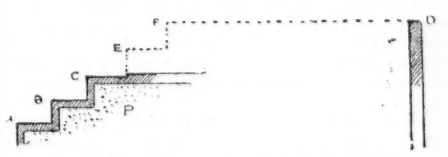
All the monuments of this date, however, are not so bald and ill designed as this. The Smith monument in St. Michael Theydon Church, has considerable artistic merit. This is one of the monuments with a recumbent figure leaning the head on one hand and looking outwards, which form a class by themselves. The treatment of the arch, the ornaments at the back and the inscription tablet in the middle, is so like that of the Paston monument in North Walsham Church (see *Builder*, August 31, 1889) that one may conclude they were designed if not executed by the same hand. The upper story found in the Paston monument, however, is not here. The little obelisks standing on balls at the angles put in their appearance, and the centre piece is a bold sculptured panel with scroll mountings (again very similar to detail in the Paston monument), rather spoiled by the ugly projections on each side of the panel. The face of the figure is obviously intended as a portrait, and has a good deal of character. The Sir Thomas Smith to whom the monument was erected appears to have been a man of note, and played a large part in political affairs in his day; a sketch of his biography is given. It is also mentioned that he was an intimate acquaintance of John of Padua, whom he knew in Italy.

Among other Renaissance monuments illustrated is the Rich monument in Felstead Church, which as the author observes, is exceedingly Italian in character; so much so that we can hardly have a doubt of its being the work of Italian artists; the characteristic naïvete of English work is entirely absent. The little nude figure of Fame, over the tomb, also speaks a language not then known in purely English art. Another noticeable monument illustrated is the incised slab to Lady Alice Tyrrell, in East Horndon Church. It is incised alabaster, treated in the same way as a brass and let into the floor; the figure of the deceased, in finely indicated drapery, in the centre, with a border of niches and small figures at the sides. Over the head of the principal figure is an indication of vaulting, with the joints of the filling-in carefully shown; a rather unusual incident. Lady Alice Tyrrell died in 1422. As might have been expected, the slab is not in very good preservation. It is a curious and beautiful example of work of its kind, and it is to be hoped all possible care will be taken of it now.

Among other monuments illustrated in the book we may mention the Salberghe monument in Thorpe-le-Soken church, containing some rich decorated Gothic ornament, and a still finer and more sumptuous one of the same style (both of the wall-arch type) to Sir John Boutetort, in Walter Belchamp Church. The letterpress contains a great deal of historical information about distinguished members of old Essex families, which is of real interest, and perhaps contributes quite as much as the illustrations to the value of the book.

NOTES.

WE referred in a previous number (page 185, *ante*) to the discovery of the steps up from the orchestra to the stage in the remains of the Megalopolis theatre, as strong evidence against Dr. Dörpfeld's view that the Greek theatre had no elevated stage, and that the characters as well as the chorus acted in the orchestra. The steps were not all in existence, but there were three, and the remaining two, reckoning the same "risers," would have carried the steps up to the height of the top of the wall in the rear, regarded as marking the level of the stage. Dr. Dörpfeld, however, having inspected the remains, is of opinion that the English explorers have overlooked a detail in the upper step which should give cause to suppose it to be the termination of the flight of steps. The point is illustrated by the accompanying small section, which shows the steps and wall and the dotted restoration of



the English party. Dr. Dörpfeld considers that this is a mistaken view, arising from an inadequate examination of the exact structure of the top step. He says that the two lower steps are thus composed; an inner core of indifferent material is faced with slabs, which form the actual steps, the horizontal slab merely facing the vertical one of the next step; but in the case of the top step, supposing the two other steps to be superimposed, the horizontal slab would be continued in a perfectly unnecessary way under the superimposed step. This the English excavators, he says, ignore. The long horizontal slab was obviously, according to Dr. Dörpfeld, the top actual step when the theatre was in use, as it is now the top actually surviving one, and cannot, therefore, legitimately be continued by any other. Further, on this top step there is a slightly varied surface, common enough in Greek buildings, merely to give the line of a wall,—in this case probably the wall of the proscenium. If we are to accept this delineation of the upper step to be correct, there is no doubt something unexplained. But in that case what is the use of the lower steps? Mr. Penrose has been examining the remains, and when he returns to England we shall probably have his opinion on this interesting point. The conclusion that the Greeks had no stage and that the principal characters acted in the orchestra would very much let down the æsthetic of Greek play-acting, to our mind, and we are hardly prepared to adopt such a view on the strength of a small fillet worked on a step, especially taking into consideration the very obvious desire of German archæologists to find English archæologists in the wrong whenever they can.

THE closing day for receipt of exhibits for the International Art Exhibition at Berlin is now passed, and the hanging committees are having a great strain put on them, especially as the number of works of art sent in is far larger than they expected, and a very careful sorting will be required, so as to reduce the number to that for which there is hanging room. According to the local papers, Bavaria seems to be the only part of the German Empire which will not be properly represented, this gap being caused by differences between the respective Art Societies of Berlin and Munich, which latter city will hold its Art Exhibition simultaneously with the Berlin one, in spite of the protestations which have been made against this course. Among the non-Germans, the French will, according to the local papers, be to some extent represented after all, M. Bouguereau heading the list; and the French school of painting will be represented by a large number of exhibits sent by American artists residing in Paris. According to numbers, Russia and Spain seem to head the list of non-German exhibits. As regards the opening of the Exhibition, which will, as intended, take place on May 1, we hear that the ceremony will be performed by the Dowager Empress Frederick, the Emperor and his Court being present.

THE Committee of the architecture section of the Congress of Hygiene to be held in August are projecting an exhibition of architects' drawings of sanitary buildings and sanitary construction, to be on view during the Congress. The idea is, we believe, to confine the exhibition strictly to practical drawings; plans, sections, and elevations. A Sub-Committee consisting of Mr. T. W. Cutler, Mr. Rogers Field, and Mr. H. H. Statham, has been appointed to organise the exhibition, Mr. Cutler acting as Hon. Secretary. We are asked to call the attention of architects to this, and to say that Mr. Cutler will be glad to hear from architects who are willing to contribute drawings, if they will kindly communicate with him at 5, Queen-square, Bloomsbury.

GREAT interest is being taken in the proceedings of the Joint Committee of Lords and Commons engaged in considering the railway rates proposals, the attendance at the opening sitting on the 10th inst. being larger than could be accommodated. After some preliminary skirmishing by the counsel engaged, it was arranged that the schedules should be taken together as far as they were identical in terms; and that, should the Board of Trade be required to give the Committee their reasons for any of the conclusions embodied in the Provisional Orders, they should be given in open court. The Duke of Richmond—whose great experience eminently qualifies him for the position,—is the Chairman of the Committee, the composition of which has been attended with some difficulty, owing to such a large proportion of the members of the Lower House being more or less directly interested in the question. During the last few sessions, such members as are well acquainted with the subject, or have a personal interest in it, have naturally pursued it in such earnest as to have acquired a bias tending to disqualify them from serving on the Committee. Several names which were before the Committee of Selection have been rejected in consequence; while, of the former class, Dr. Hunter,—who is regarded by the railway companies as a traders' partisan, and was consequently strongly objected to,—has been retained. Sir George Baden-Powell tendered his resignation on the ground that he represents a constituency largely interested in the questions which have to be decided,—a very different position to that of a member personally interested, and one which could hardly be looked upon as a bar to service on the Committee. Lord Stalbridge, the new chairman of the London & North-Western, in his zeal for his company's interests, took the unusual course of communicating with the Chairman of the Com-

mittee of Selection direct, with respect to certain of the appointments objected to by the railway companies. It would have been supposed that such protests would have been made in the House of Commons through a Member, and his Lordship's action was called in question as almost amounting to a breach of privilege. The subject was discussed on Monday night, and, after explanations had been given, and Sir John Mowbray had testified to the unanimity which has invariably characterised the decisions arrived at by his Committee, Mr. Gladstone and Mr. W. H. Smith joined in expressing the complete confidence which the House possessed in the fairness with which the Committee of Selection discharged their duties.

AMONG the things "not generally known" may, perhaps, be included the fact that the senders of traffic by railway are liable to the company for payment of the carriage, notwithstanding that they may have consigned the goods "carriage forward." In other words, as explained on the 9th inst. by the Liverpool County Court Judge, the term "carriage forward" amounts, in the eyes of the law, to nothing more than a direction that the consignee is to be applied to for the freight, but does not destroy the right of the company to recover from the consignor if the application should be fruitless. Of course, as a general rule, railway companies look upon the instructions given on a consignment note as a *bond-fide* indication as to whether the sender or the receiver is liable for payment of carriage under the conditions of sale, and they often avoid loss and law expenses by a strict observance of the principle that possession is nine points of the law. Thus, goods consigned "carriage forward" are frequently detained until the freight is paid, and the right of recovering from the sender is but rarely resorted to. Sometimes, however, this is impracticable, as in the Liverpool case just alluded to, in which the "goods" consisted of a cage of lions,—a consignment which the company were glad to get rid of as speedily as possible, without staying to settle the disputed question of carriage.

BERLIN seems at last to be showing some energy in regard to the long-spoken-of Great "International" Exhibition. During last week several meetings were held on the subject, and at one, at which the representatives of the leading manufacturers and merchants of the Empire were present, as well as the Minister of Commerce, the scheme is said to have been definitely arranged. At a business meeting of the municipality the subject was seriously considered, and posters and advertisements were issued inviting those interested in the matter to attend a large public meeting on the 15th inst., at the Town Hall. According to the advertisement, the years proposed for the exhibition are 1895 or 1896.

FOR some years the Norwegian Government has been trying to reform the mode of technical education in their country, and, after due consideration of the requirements, they proposed the formation of,—(1) a Royal Technical College at Christiania, with full University rights, having four divisions,—one for architecture, one for civil engineering, and one each for mechanical and chemical technology, the annual cost to the country of such an institution being estimated at 114,000 crowns; (2) three Lower-Grade Technical Schools,—one at Drontheim, one at Christiania, the third at Bergen, each with three divisions (the building trades, technical engineering, and elementary chemistry), each of these institutions incurring an expense of 40,000 crowns a year which was to be borne partly by the Government, partly by the respective municipalities; (3) a number of artisans' evening schools for the winter months only, in which drawing would be the principal subject taught, whilst popular courses of elementary mathematics, mechanics, and chemistry, could also be given, these schools costing their respective municipalities about 6,800 crowns annually. The Government, in putting its proposals in the form of a Bill, has been defeated in its main object, the formation of a Technical College, this defeat, as we hear, being more due to party politics, and the choice of the city at which it was to be formed, than to opposition to an idea that would have satisfied a long-felt need. At present, the Norwegians have to obtain their theoretical technical education in other countries than their own, in Germany, France, and England, according to the specialties they wish to perfect themselves in.

THE case of Tucker *v.* Kaye, heard on appeal before Lords Justices Lindley, Bowen, and Kay, is a curious example of the effect of priority on the legal value of a patent. The plaintiff brought the action against Messrs. Kaye & Sons, the well-known lockmakers, for infringing a patent of his. The two patents were thus described in the report in the *Times* of the 13th inst.:—

"'My invention consists in making latches and other locks without any externally projecting bolts, thus avoiding the projecting sharp-edged bolts of ordinary locks and latches, which are apt to damage the clothes of passers by. I arrange the bolts of locks so that when they are drawn back by the key or door-handle entirely within the lock they are held in that position while the door remains open, but in closing the door another bolt, which, like the main bolt, does not project beyond the face plate, comes to bear against a slightly raised part on the striking plate, and is thus moved, releasing a detent, and so allowing the main bolt to advance and become engaged in the striking plate.' Then, after describing the mechanism in detail, the plaintiff declared his claim to be 'in combination with the main bolt urged forwards by a spring, a detent holding the bolt back when the door is open, but released by a projection on the striking plate in the act of closing the door, substantially as and for the purpose herein set forth.' The object of the defendants' invention was automatically to wedge a door tight in its place when closed, without hard slamming. It was thus described in the specification in the year 1888:—'It consists in arranging the lock bolt to shoot out straight from the door by the force of springs, and for the purpose of withdrawing the lock bolt from the striking-plate rack teeth may be formed on one side of the same, which gear with a pinion mounted in the lock case, the lock bolt, when withdrawn, being held back by an arm mounted on a pin, and which is automatically released on closing the door by the lock bolt coming in contact with the incline of the striking-plate, by which it is moved inwards, the springs compressed, and a bar released, so that on the lock bolt arriving opposite an opening, it is forced out by the before-mentioned springs, and, being formed wedge-shape, fitting the angle of the flange of the striking-plate, holds the door tight in its place.'"

This looks like coming very near the same thing; but the defendants, while denying the infringement, relied especially also on a patent granted in 1881 "to a Mr. Wilson of Leeds" which they asserted was substantially the same as the plaintiff's patent, and therefore left the latter no ground for a claim for any such degree of novelty as would properly form the subject of a patent. The judges took the same view, and dismissed the appeal, on the ground that the plaintiff himself could claim no novelty over the previous patent of 1881. Whether the patentee of 1881 would have had any better ground for action does not appear from the report. The case shows the necessity of a plaintiff considering, before bringing an action for infringement, how his own patent is situated in reference to those which preceded it. Had the patent of 1881 not existed, the result might possibly have been different, so far at least as we can judge from the report.

THE Labour Commission has been contituted, and will shortly begin its sittings under the chairmanship of Lord Hartington. So much has been written in the daily press of the members of this Commission, that it is unnecessary to say more about it here, except to point out that though Lord Hartington is best known as a politician, yet that he is also a man of business, having for years attended to the Duke of Devonshire's various interests in the locality of Barrow-in-Furness. That many interesting facts will be elicited by this Commission is certain, and probably some minor legislation will ultimately result from its deliberations. But that it can have any sensible effect on the great question of the relations of capital and labour, we cannot believe, since they are governed by immutable economical laws.

THE arrangement made between the Postmaster-General and the Messenger Companies, by which the latter will still continue their work with the sanction of the Post Office, is very satisfactory to every man of business. The great size of London, especially, has rendered such institutions as these absolutely necessary. An architect, for example, has to send plans to his client for inspection, or perhaps to show some alteration, and needs them back at once. A messenger belonging to one of these companies is dispatched with them, and the whole matter is disposed of without difficulty. The only unsatisfactory point in connexion with this subject is that the Postmaster-General should not have made this arrangement before: he has been practically forced to do so by public opinion and by the energetic management of these companies. So far as can be ascertained, the system is in force, not in consequence of the action of the Post Office, but in spite of it.

IN the case of "*in re* Whiteley and Roberts Arbitration," reported in the current number of the "Law Reports," Mr. Justice Kekewich decided this short, simple, and important point,—viz., that an arbitrator's award cannot be set aside, although he admits that he has been guilty of misconduct. The decision is based on the technical legal principle that an admission by one person is only evidence against that person, and not against any other. In the case in question the conclusion of fact at which the Judge arrived was that there had been an admission by the arbitrator that he had been bribed by one party, "from which, of course the conclusion would follow that the award was corrupt." But, says the Judge, "proof by the evidence of others of an admission by the arbitrator is not sufficient to prove misconduct or fraud on his part." It is impossible in this place to discuss the legal question raised by this case, but to the common sense of most men it will appear altogether unjust that when, by evidence which the Judge believed, it is shown that the arbitrator has admitted that he has been bribed, the awards should stand. There now exists an "Arbitration Act," and we cannot but think that it should be amended by providing for such a case as this. It could be done by a section enacting that where a *primâ facie* case of misconduct had been made out against the arbitrator and one of the parties, then that the latter should show cause why the award should not be set aside.

THE Charity Commissioners have sealed, and the Committee of Council on Education have formally approved, certain important schemes framed under the City of London Parochial Charities Act, 1883, for the future administration of some principal technical schools in London. These are the Battersea, South Western (Chelsea), and Borough-road (Lambeth), Polytechnic Institutes, together with the Regent-street and City Polytechnics. For each of the first four a new governing body is set up, to include representatives of the County Council, the School Board, and (for all) what is termed the Central Governing Body established to carry out the provisions of the Act. For the Regent-street Polytechnic Mr. Quintin Hogg, so closely associated with its inception and career, is made governor for life. Amongst his first fourteen colleagues are nominated Sir Albert Rollitt, Dr. J. H. Gladstone, Sir Lyon Playfair, and Messrs. J. E. Kynaston Studd, F. A. Bevan, A. J. Mundella, and Howard Morley. Its annual income, from without, consists of Mr. Hogg's gift

of 1,000*l.* for ten years from July 1, 1889, with 3,500*l.* subsidy from the Central Fund. The new City Polytechnic is to be created by a union for common membership, classes, apparatus, &c., of the City of London College and the Northampton (Clerkenwell) and Birkbeck Institutes. Each constituent will retain its own governing body for separate control, but the three will have a central governing body for general purposes. Capital sums and annual grants have been assigned to these three institutions out of the Common Fund; besides the freehold or leasehold properties they already possess. To the Battersea Polytechnic the Commissioners undertake to grant 2,500*l.* per annum as soon as they are satisfied that the contributions, amounting to 60,000*l.*, are duly applied for site, buildings, and equipments. So, similarly, they will give 1,500*l.* yearly to the South-Western Polytechnic,—for which the 50,000*l.* is subscribed,—upon the Manresa-road site.* To the Borough-road Institute an annual grant of 2,500*l.* is promised. The Northampton Institute receives, yearly, 1,000*l.* from the Skinners' Company, a share (675*l.*) of the Robert Kitchin bequest to the Saddlers' Company, and 3,350*l.* from the Fund. In every instance the Commissioners require both site and buildings to be vested in the Official Trustees of Charity Lands, and that their code of regulations for management and conduct of an Industrial Institute shall be adopted and observed.

THE railway question in Edinburgh continues to be agitated by the citizens. A new suggestion has been brought forward, and is to be embodied in a petition to Parliament in opposition to the North British Railway Bill. In the petition a belief is expressed,—

"That it is impossible, from the low situation of the ground upon which the Waverley station is built, to convert it into a convenient railway station, and that ways and means may be found whereby both the great railway companies in Edinburgh may see it to their own advantage, for the convenience of the travelling public, and for the improvement of the city, which ought to be an object for both companies, to form a joint station on the west side of Lothian-road, where the Caledonian Railway Company has ample ground for the traffic of both companies, and where a handsome station could be built on the level, more convenient for the travelling public, and more easily accessible from all parts of Edinburgh than the Waverley Station. If such an arrangement shall be found desirable for all concerned, it would admit of the North British Railway lines and the Waverley station being removed from Princes-street Gardens and the valley of the old Nor Loch,—where they never should have been,—thereby greatly enhancing the beauty of the city, and improving its sanitary condition. These views, unfortunately, were not submitted by the Corporation of the City to the House of Lords or the Committee of that House, which has lately reported in favour of the preamble of this Bill."

The Bill is objected to *in toto*. Meantime the point at issue between the Town Council and the Caledonian Railway has come to a satisfactory conclusion, the company having agreed to throw back the frontage of the new station to a point within the railings which at present enclose the station. It appears from the *Scotsman* that the majority of the Lord Provost's committee are in favour of adopting a conciliatory attitude towards the North British Railway Company, and that "something like a scene" occurred at a meeting of the committee held on Friday of last week. Finding that the inclination of the sub-committee appeared to be to accept the inevitable in so far as the proposed double line through Princes-street-gardens is concerned, his lordship abruptly left the chair. A new chairman was elected, and it was resolved to recommend that a deputation should confer with the railway directors in a conciliatory spirit.

WE have received the first annual report of the "Hampstead and St. Pancras Sanitary Aid Committee," which appears to be an amateur association for hunting up insanitary corners and either persuading the owners or inviting the local authority to abate the nuisance. The Committee has taken action in regard to 173 houses, and reports that the majority of these have been "thoroughly rectified." The cases in which the Committee interferes are those of dilapidated or dirty interiors; damp floors ceilings or walls; refuse allowed to accumulate; water-closets unprovided with water, or not properly flushed, &c., &c. The Committee hope that clergymen, doctors, visitors, and others who go about among the poor will co-operate with them by reporting cases that come under their notice. Mr. Locke Worthington is the Honorary Secretary of the Committee.

THE new Church of St. John the Baptist, Epping, which was consecrated last week, stands on the site of the old free Chapel-of-Ease in the Street, or Townside, rebuilt, we gather, in 1833, *teste* Thomas Wright's "Essex," 1835. The original chapel had been granted by the canons regular of Holy Cross and St. Lawrence, Waltham, to one John Peryent, *circa* 1540. A few years afterwards the chapel was vested in trustees, and in 1622-62 two aisles were added. By a special Act the new church* will constitute the parish church, thus replacing the remote All Saints' at Epping Upland. This also had belonged to Waltham Abbey, and since the Dissolution has passed, together with the manor, through various families, comprising those of Sir Thomas Henneage, upon whom the Crown bestowed it in 1572, and Finch, Grey, and Conyers of Copped Hall, close by. Latterly restored, at a cost of 3,000*l.*, the ancient building, with its conspicuous brick tower, credence-table, and three aumbries, has long been of interest to archæologists. According to Domesday survey Epping manor† appertained from earliest times to Holy Cross as founded by Canute's standard-bearer, Tovi. Other accounts make it to be part of the possessions with which Harold enriched that abbey. Adeliza, second consort of Henry I., gave the parish tithes to the monks, whose successors, converted into regular canons by Henry II, retained the church and its appurtenances until the surrender.

WE print in another column the resolution passed by the Birmingham Architectural Association at their last meeting, to the effect that if any new building is to be erected immediately adjoining and forming part of the new Law Courts, on the site at the back, it ought to be entrusted to the architects of the Law Courts, Mr. Webb and Mr. Bell, who alone could be expected to harmonise the new building satisfactorily with their original design. The subject had been previously drawn attention to in a letter from Mr. W. Henman, the architect, to the *Birmingham Post*, at the close of which he wrote:—

"If the intention is to find some means of giving to the Law Courts that dignity which, from the city side, they now lack, is it not, to say the least, wanting in good judgment and artistic appropriateness, to think of entrusting what is practically an addition to the courts to other than the able hands which have designed and carried out these buildings? Although I have had no opportunity of discussing this matter with my professional brethren in the city, much as I desire that Birmingham buildings should be designed by capable Birmingham architects, I feel sure I am but expressing their sentiments when I say that as a body they would willingly forego any chance of erecting the contemplated buildings under the condition that they are to harmonise with the Law Courts, which, interpreted by the public, must simply mean 'the same as.' Under such a condition no work of art can be produced. It can but result in failure and disappointment; and, although personally unacquainted with these gentlemen, I say, without hesitation, that Messrs. Webb and Bell, the architects of the Victoria Law Courts, are the only persons capable of harmonising the proposed building therewith in a satisfactorily artistic manner."

This is quite true; but it is not the less to the credit of Mr. Henman and the Birmingham Architectural Association that they should so chivalrously stand up for the artistic rights of the original architects, who are strangers to the town. It is not, we fear, every body of local architects who would act on that principle, and it is a pleasure to record our appreciation of the high-minded action of the Birmingham architects in this matter.

NOTES FROM ATHENS.

LIKE so many places nearer home, Athens has passed through an exceptionally severe winter. Till within about a fortnight of Easter communication with the interior of Greece was practically impossible. Snow was lying deep on the mountains, and even in Athens itself it had fallen plentifully from time to time,—a very rare occurrence indeed. Under such circumstances the work of archæological excavation has been hardly possible, the American school being the only one of the four schools that has attempted to do anything. Now, however, two members of the British school, Mr. Loring and Mr. Milne, have gone to Megalopolis to finish the entire clearance of the theatre, the work at which was discontinued last May. Mr. Penrose has also recently visited the site, and we hope shortly to have his opinion on the various points at issue,—especially the weighty question of the stage. Mr. Ernest Gardner has again resumed his duties at Athens as director of the school.

Now that the long-delayed question of who was to undertake the excavation of Delphi has been definitely settled, there seems every probability that the villagers of Castri, which occupies the site of the old sacred enclosure, will be immediately bought out, and that active operations will be commenced this spring. The new director of the French school, M. Homolle, has now under him five students, all of whom are new to Athens, with the exception of M. Legrand, who, last year, directed the excavations on the site of Troezen.

Opinions vary greatly as to the probable results of the excavation of Delphi. The soil is very thin, and the fact of the existence of a village built over the site diminishes very much the chances of finding much statuary or the like. The expectations of the French themselves are not great, but, in any case, we are sure to gain much additional topographical knowledge, and no doubt the harvest of inscriptions will be large.

Much excitement was recently caused in Athens by the premature announcement that the Americans had discovered the tomb of Aristotle at Eretria. This, as Dr. Waldstein pointed out at a meeting he held at the American School, while the work of excavation was still in progress, is too much to state positively as yet. The facts are as follows:—A foundation of a very fine tomb was discovered, obviously of some notable person. Beside it, in a later grave, a foot higher, and made of earlier materials, was the inscription:—

. . . . . ιστη
. . . ριστοτελου.

The finds comprised, amongst other objects, two silver styli and a pen, and, strangest coincidence of all, a terra-cotta of the philosopher type with the hands folded. Christodoros describes a statue of Aristotle standing in this attitude, and it is curious that close to an inscription in which the name of the great philosopher occurs such appropriate objects for his grave should also be discovered. There is a strong probability, though not an unfailing certainty, that things found in graves are suggestive of the life and tastes of the deceased. In graves of females, mirrors and female ornaments are found; in those of males, strigils and palæstric utensils. The occurrence of these objects may well lead one to believe, although they may not actually prove, that they had reference to the pursuits of the deceased.

We know that Aristotle died at Chalcis. From the American researches it would seem that there was a long street of tombs,—a road lined with graves, stretching from Chalcis to a point far beyond Eretria itself. It seems unlikely that all these graves were those of natives, other inscriptions found during these excavations commemorating persons hailing

* For view and plans,—Mr. J. M. Brydon, architect,—see the *Builder*, March 21 last. On March 28 last we published a view and a plan of Mr. E. W. Mountford's selected designs for the Battersea Institute.

* A short description of the church will be found in another column. Messrs. Bodley & Garner are the architects.

† "Terr, canonicorum sancte Crucis de Waltham . . . Epingam tenuit semper sancta Crux pro manerio & pro ii. hidis & xv. acris"—see P. Morant's "Essex," vol. I. (1768).

from Antioch and Heracleia, for instance. There are thus strong grounds for connecting these discoveries with the philosopher, and it is a strange coincidence that this should follow so soon after the startling find, in our own British Museum, of one of his lost writings.

The other graves opened at the same place contained a profusion of beautiful gold work and jewellery, probably of Hellenistic times. The most striking find was that, in a female grave, of a pair of gold earrings in granulated work, in the shape of doves set with rubies and other gems. In other graves the breasts of the dead were covered with thin gold leaves in great numbers.

Professor Richardson, the Annual Director of the American School, has investigated the fortifications and inscriptions extant at Eretria, and Mr. Fossum has been excavating the theatre, which seems, from the description, to have been Romanised; it has remains of remarkable stage buildings, with an arched passage running cross-wise through them.

We believe that the excavations at Eretria have at present been suspended, and the three students who were engaged in the work under the directors have returned to Athens. It is probable that excavations may be begun on a site in Arcadia during the spring, and perhaps also further work may be undertaken at Platæa, where members of the school were engaged last session.

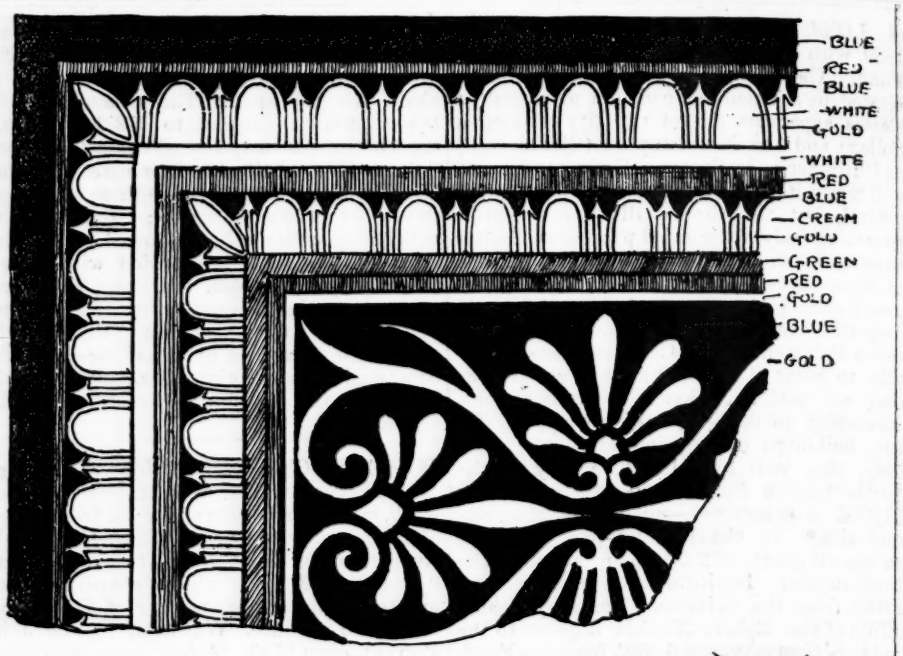
Dr. Dörpfeld has been giving his usual winter course of topographical lectures on the various sites and buildings of Athens and neighbourhood, and after he has concluded his annual Peloponnesian tour with the members of the German School, during the course of which he will visit Megalopolis, he will be enabled, by Madame Schliemann, to complete the work undertaken and left unfinished by Dr. Schliemann and himself last summer at Hissarlik.

Mr. Penrose has lectured, at the meetings of the British School, on the Olympieum and his excavations there, on the proportions used by the Greek architects, and, lastly, on the earlier Parthenon (the so-called Parthenon of Cimon), which he considers to be anterior to the Persian War, and, in fact, to be the old Hecatompedon referred to in an interesting sixth-century inscription lately pieced together by Dr. Lolling. He has had a pit dug on the site of the Olympieum showing a corner of the later work of Antiochus's time resting on the foundations of the Peisistratean temple. The work on the latter exactly resembles that on the substructure of the Parthenon generally attributed to Cimon, and goes to confirm his theory that it was of earlier date. He has also many other strong points in favour of this view,—one, notably, being the measurements of the early temple which he deduces from the builders' setting-out marks existing on this substructure, and from which he has worked out the proportions and relative sizes of the superstructure itself, which fits exactly with the name Hecatompedon, and the words of Hesychius. Mr. Penrose has also been further investigating the orientation of Greek temples.

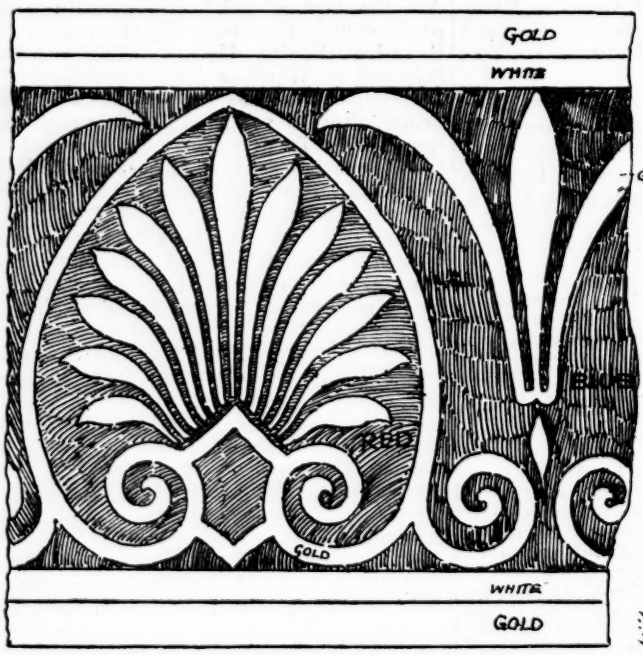
As the new writing of Aristotle proves almost conclusively that the temple by the Dipylon is not the Theseum (a point which Dr. Dörpfeld has long contested), Mr. Penrose has pointed out a very probable site for it on the northern slope of the Acropolis.

Now that the spring has fully set in, and that there is a chance of excavations being carried on in various parts of Greece continuously for the next two or three months, we hope to hear of other interesting and important discoveries before the end of the present session.

THE ENGLISH IRON TRADE.—The English iron market remains stationary. Great quietness prevails, and there is still comparative weakness in prices. At the same time, it is evident that consumers must be running out of their contracts, and will have to come into the market again before long. There has been greater firmness in pig-iron, at any rate on the part of makers, and buyers would readily place their orders if they could obtain some slight concession. Cleveland pig has improved 3d. per ton. The Glasgow warrant market has shown more animation during the week, but Scotch makers' iron is very quiet. There is not the least improvement in the hematite iron market, but makers have been able to maintain their prices. The quarterly meetings have not resulted in much business, the consequence being reductions in some departments of the finished iron trade. The steel market continues quiet and weak. Shipbuilders are not booking many additional orders. The engineering trades are without material change.—*Iron.*

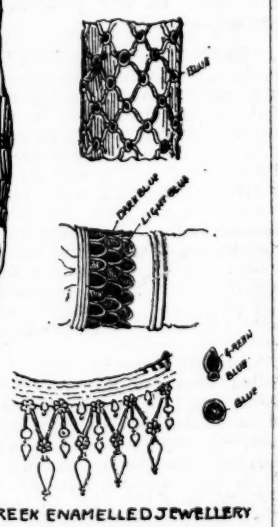


PART OF CEILING DECORATION. PROPYLAEA, ATHENS



PAINTED ORNAMENT ON CYMA OF PARTHENON

PART OF GOLD SCEPTRE. INLAID. MYCENAE.



GREEK ENAMELLED JEWELLERY

Illustrations to Mr. Clement Heaton's paper on "Cloisonné in Ancient and Modern Times."

THE USE OF CLOISONNÉ FOR DECORATION IN ANCIENT AND MODERN TIMES.*

Egypt.

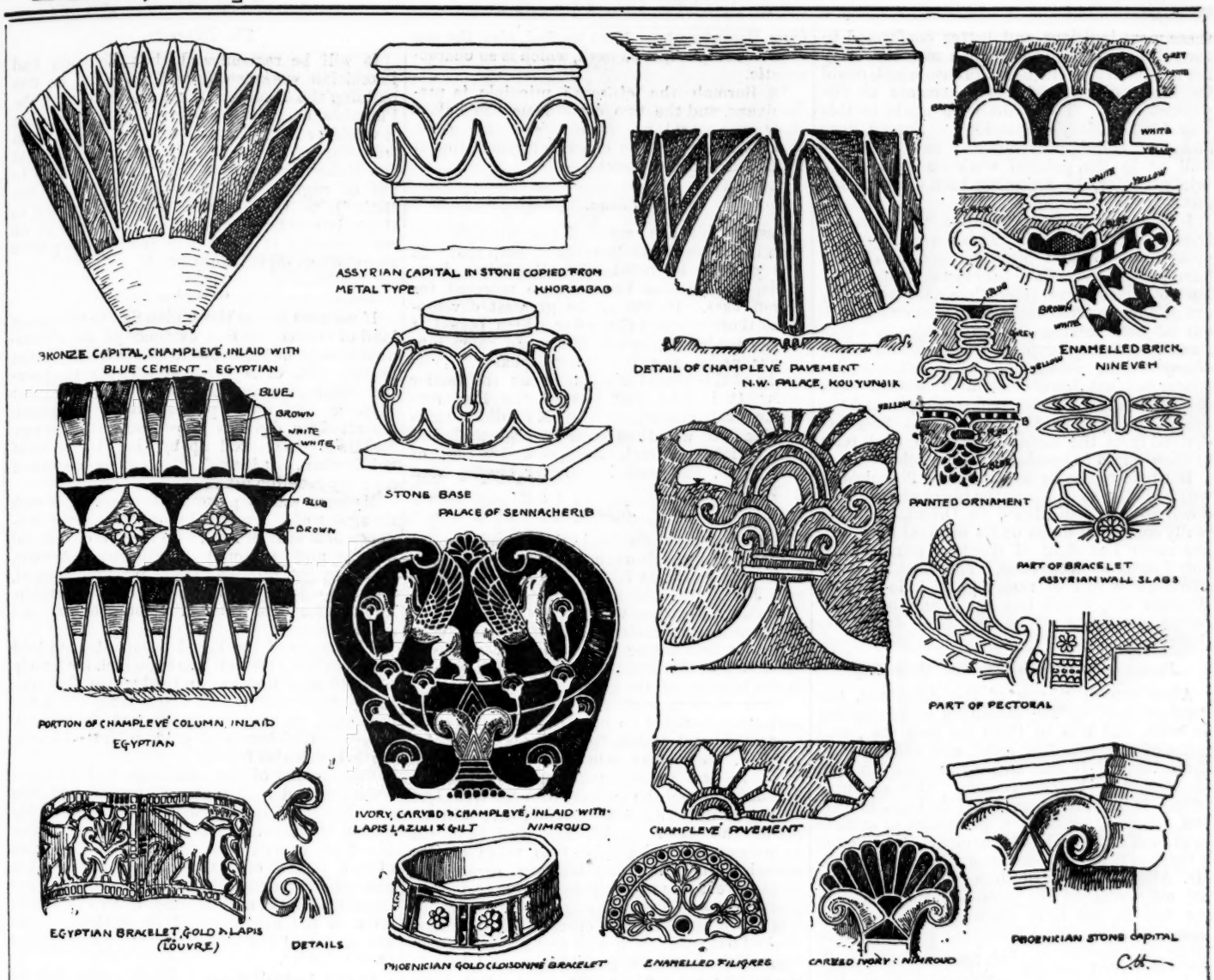
THE history of *cloisonnage* begins on the banks of the Nile in the dim light of Egyptian civilisation. When Athens and Rome were yet unbuilt, the arts of working in metal were known in the land of the Pharaohs, and thirty centuries before our era, *cloisonné* jewellery appears to have been already perfected, and its use was continued through several dynasties. A statue in wood, found at Memphis, and said to date 3426 B.C., has the eyes laid in hard material and bronze lines. The mummy-case of King An-Antef, in the British Museum, is similarly treated.

Cloisonnage, among the Egyptians, was made not only in gold but in bronze, stone, porcelain, wood, and ivory. The mere enumeration of the materials used shows that it held no isolated place in their art. It entered, indeed, into the decoration of many kinds of work, and must have been held in the highest esteem. The proof of this is found in the fact that it held the place of honour in the adornment of the dead. Nowhere were the dead so profoundly reverenced as in Egypt, where it was a current belief that the eternal existence of the soul, which so much occupied their thoughts, was connected with the conservation of the body. The ritual of the dead prescribed that certain ornaments should be placed with the deceased, and the pectoral was the chief of these. These pectorals remain in great number, and are in the form of hawks and other emblems, sometimes in *cloisonné* of gold, but mostly in *champlevé* of less costly material; and these, after remaining in the darkness and silence of the tomb while the long roll of history was being enacted, are at last exposed to view in our collections. The finest of these are at Boulak, where that found on the body of Queen Aah-Hotep, dated 1703 B.C., is one of the glories of the collection. Another of great beauty, found in the tomb of Rameses II., the oppressor of the Hebrews, is at the Louvre, and there is a gold hawk in London.

Besides the pectorals, bracelets, necklaces, &c., were made in *cloisonné*, and the kings are represented as wearing such. The fine pair of bracelets at the British Museum are in gold and *lapis lazuli* and blue-lime cement, with figures modelled in low relief.

We find *cloisonnage* also worked in wood and ivory, which has been gilt. It was used for spoons, boats, and all manner of objects. There

* A paper read by Mr. Clement Heaton before the Society of Arts, March 24.



Illustrations to Mr. Clement Heaton's paper on "Cloisonné in Ancient and Modern Times."

is a winged figure in Jermyn-street Museum, in wood, with inlaid wings.

The system was also extended to architectural decoration. The great hawks and winged lions over the entrances, as at Karnak, are cut out and coloured in a way that produces a *champlevé*, and the vertical coloured lines, so often found on the cornices, are treated in the same way. It seems natural to suppose that these hawks, &c., were copied from the golden emblems in *cloisonné* jewellery worn on the person. And this the more that, in many examples, we find in the mummy-cases at the British Museum, scrupulously exact imitations in painting of the different kinds of *cloisonné* jewels formerly on the mummy within. The eyes, too, of the painted figures are certainly often copied from the inlaid bronze eyes found in some examples, and this explains their peculiar drawing.

I mention this particularly, because it is the first instance of the influence of *cloisonnage* on ornamental design, and this has occurred again in other times.

At the British Museum are also found parts of stone columns treated as a *champlevé*, inlaid with coloured porcelain, and two capitals are in bronze, which are true *champlevés*, and have been inlaid with blue-lime cement, part of which remains. These may have been parts of the light wood and metal architecture represented in paintings, and in which the design is just that suitable for *cloisonnage*.

It is evident, therefore, that in Egyptian art, the oldest art in the world, *cloisonnage* was deeply seated, and I think much of the technique of Egyptian drawing will be found to be due to the fact that the artist was thinking of inlay, rather than looking directly at nature.

The use they made of it for capitals and columns is suggestive of what might be done again. Mr. Aitchison said the other day, "We especially want to give the new materials employed, particularly iron, some vigorous stamp of architectural beauty;" and may it not be that, by returning to the source which has already yielded so much, new ideas may yet be gathered, and that the masculine vigour of early art may yet have a lesson for us?

Assyria.

If from the Nile we pass to the banks of the Tigris and Euphrates, we find the Assyrians and Chaldeans also making use of *cloisonnage*. Though the absence of tombs deprives us of any such record from actual remains, as in Egypt, inscriptions supply the void in great measure. It is sad to find these recount the ferocious cruelty of the monarchs, as well as their magnificence in decoration. We learn how captives were exposed before the great bulls and flung into the fosse, eaten by dogs, wild beasts, and birds of prey, "to rejoice the great gods!" at the same time that we learn the magnificence and sumptuousness of the palaces. Mr. Charles de Linas, who has minutely investigated the history of *cloisonné* jewellery,* cites several inscriptions. It is recorded that in Chaldea statues were draped with gold incrusted with precious stones; and Mr. de Linas considers, as the result of his inquiry, that within the temples were plates of metal or stone, inlaid with figures in coloured stones, and that the figures on the exterior in enamelled bricks were copies of this inlaid work, the enamels representing the material employed, — yellow, the gold; white, silver; red, cornelian; blue *lapis lazuli*, &c. The drawing of these figures is such as to lead me to think any other origin than that of inlay is impossible. The semicircular frieze over an entrance arch at Nineveh, of which a drawing is given, is an example of this.

The use of gold and precious materials was lavish; and this is the more easy to understand, when it is remembered that gold was valued in those early times precisely for its decorative qualities, and was not used for money, and that stores of this metal were extracted from every conquered foe. An inscription (604 B.C.) mentions a cupola covered with gold, and a temple enamelled and covered with gold.

Enamel is recorded as having been stored up in the Royal treasuries as a precious substance, and it would be interesting to know whence this enamel came.

If, from the inscriptions, we turn to the remains, we find represented in the wall-carvings, jewels, dagger-handles, and other personal objects, and the sacred tree,—so designed that they could certainly be executed in *cloisonné*,—and types of design, which would be natural for such work, are found in ornament, whether it be embroidery, painted work, or enamelled brick. I cannot but think that here, also, as in Egypt, the origin of much of the ornament is to be found in *cloisonné*. The records in the inscriptions of the use of metal, ivory, and precious stones in architectural decoration is quite in accord with existing remains, though, of course, little metal work has survived destruction.

MM. Perrot and Chipiez* show that wooden columns covered with metal were used in Assyria, and the volute is mentioned as originally being in metal. The only Assyrian columns discovered show a bulbous form of capital and base, in stone, evidently copied from a metal original, with raised *cloisons* as the only decoration. Place found remains of wo.oden shafts covered with bronze and gold scales

Furniture was made in metal, andwith great luxury, as in the Book of Esther we read of gold and silver furniture in the palace of the king. The bronze thrones, &c., at the British Museum from Van in Armenia, show numbers of cells made in the bronze for the purpose of a colour inlay, and ivory slabs were also let into spaces provided.

The stone pavement slabs under the entrance arches, which were of great size, were really a *champlevé* in stone. Three of these are in the Assyrian basement room. An examination of them shows the surface to have been cut away to receive a colour-filling, part of which still remains. M. Perrot considers the design of

* "Les Origines de l'Orfèvrerie Cloisonnée." A perfect storehouse of facts.

* "L'Art dans l'Antiquité."

these more judicious and better conformed to the rules of art than the Roman mosaic. They are suggestive of the beautiful use which could be made of *cloisonné* for pavements at the present day. Two slabs were made in this way for St. Mary's, Stamford. Curved lines and the spiral predominate; and here, as well as in the painted work and enamelled bricks, I infer, the design has been derived from metal-work.

I have now only to mention the beautiful ivories from Nimroud. These were found in great numbers, and often repeated, and must have formed part of the decoration of the halls. Part of these come from Phœnicia, and they are of the greatest interest in connexion with our subject, because they are evidently a continuation of the Egyptian tradition, and are of *champlevé* in association with relief. The spaces cut out have been filled in with *lapis lazuli* and other colours, and parts gilt, and the design is such as to suggest that they are derived from the metallic work. I shall refer to these again in speaking of Phœnicia.

But before passing westwards to Phœnicia, it will be better to continue the history in the East down to our own times, as Oriental art has really continued much on its original lines, and has never lost sight of the true principles of polychromatic decoration. The East has been therefore a sort of reservoir of influence for Western art, which has again and again received a renewal of principles of decoration therefrom.

Persia and the East to our Own Day.

After the overthrow of the Assyrians, the Persians kept up the traditions of enamelling on brick, and it is to them we owe the grand series of works in low relief and enamel from the palaces of Darius and Artaxerxes Mnemon at Susa, now in the Louvre. One of these friezes is 12 yards long by 11 ft. high, in perfect preservation, with a procession of archers in profile, and bands of ornament. Another is a frieze of lions, with ornament above and below. Mr. Aitchison says of these that "they have not only enlarged the mind of every visitor in the Louvre, and have given an almost unique lesson in monumental colouring, but have also given an impetus to that beautiful branch of art, enamelled pottery. All the roofs of last year's exhibition at Paris were resplendent with colour, wholly due to the exhibition of these enamelled friezes."

Their effect is, indeed, of striking beauty—a harmony of soft blues, greens, and yellows, with a little white and dark brown. The whole treatment is that of a *cloisonné*, the outlines being fillets of clay, separating the enamel, and reflecting lines of light.

Cloisonné jewellery was in use in the 3rd and 4th centuries A D., in the neighbourhood of Perim, and appears to have been a survival of the Assyrian tradition. In any case, the Græco-Bactrian armlet at South Kensington shows the use of gryphons very similar to the old Assyrian type of winged figure. At the present day a beautiful form of *cloisonné* is used for belts and horse trappings in Northern Persia—silver *cloisons* set with turquoise. In modern Persia, *champlevé* enamel has been in use, and in the tile work, as at Ispahan, the principle of *cloisonnage* is strongly marked.

India.

In Indian art *cloisonnage* is fully in evidence. We find enamels of Jeypore of both *cloisonné* and *champlevé*, and the lac-inlaid brass work from Moradabad is a *champlevé* of a most beautiful kind. Jewellery is made of enamelled *champlevé*, and bowls and other large objects are also made in it at Kangra and Cashmir. A specially beautiful association of gold and enamel is made at Pertubghur for jewellery; saw-pierced gold plate being embedded on the clearest possible copper-green enamel. This system seems to have been copied in Venice. The Guthrie collection at the Indian Museum shows a series of examples of jade inlaid with gold and jewels. The work in copper and bronze shows the extensive use of the raised edge, and the same principle is carried into the architectural ornament. The resemblance between this and the Ionic Greek work is startling, and examination shows it is due to the principle being the same, while the design is different; the system in both being the use of a raised edge and concave surfaces. The Jeypore folio of architectural ornament fully illustrates this, and actual examples in the entrance-court, especially the *façade* of a house from Bulandzhaha. Here we find, also, the use of pierced stone lattice work, which is so characteristic.

In Burmah the *cloisonné* principle is predominant, and the two cones from the Palace show the actual use of *cloisonné* and gems. But the principle is so coarsely applied, that it is of little further interest.

China.

Passing to China, we find the principle has been introduced, and has struck deep root. It was perhaps imported with Buddhism from India, as *cloisonné* vessels were reserved for sacred uses. It was at its greatest development there about 1450, after which period it was somewhat neglected, but again came into favour under the Tai-thsing dynasty. The works of this period are paler than the earlier ones. It is said that one of the Emperors worked at it himself, as Louis XVI. did at lock-making. It was then entirely neglected, and was revived, through European demand, of late years, the traditions never having been quite lost.

Japan.

The Japanese received their tradition of *cloisonné* enamel through the Corea. While in India the tendency is to *champlevé*, in China and Japan it is as much towards *cloisonné*. The oldest Japanese works are decorative and vigorous in character, dark in colour, with green predominating. The *cloisons* are well marked, and the forms such as naturally arise in the bending of the metal lines.

Their modern work has been carried to a perfection, which I do not think possible to be surpassed, and which, from a technical point of view, puts every other production of this work in the background. The delicacy is microscopic, and the mastery over the *technique* of the enamel really wonderful; but still we prefer the older works, and feel that the Japanese are losing the true value of the material, and, like the Limoges enamellers, seeking to make a purely decorative and ornamental art a vehicle of representation for which it is not fitted. On the other hand, they have worked out schemes of soft and neutral colouring, which show what possibilities are latent in the system for modern use. The latest developments are the use of aventurine, and a scheme of design on a blue-black background, which is one of the loveliest forms I have yet seen. This constitutes the present day development of traditions which commenced in Egypt nearly fifty centuries ago, and which have been in use ever since. The little Japanese we lately saw at work in London is a modern representation of the ancient worker on the Nile, whose ashes have long mingled with the desert earth, but whose works yet remain.

Returning West, to pick up the thread where we left it at Assyria, we find the Phœnicians on the shores of the Mediterranean. They were allied with the Chaldeo-Assyrians by origin, and, as the great commercial *entrepreneurs* of the day, were in constant communication with neighbouring peoples, and copied their art and that of Egypt, and spread these mingled traditions in the West in the course of their trading. One of their centres, Cyprus, was the meeting-place of many currents, and here we find the art of Greece in contact with Eastern art. De Cesnola has here found a *cloisonné* bracelet, and enamelled filigree brooches of Phœnician work. This bracelet is in the Egyptian style, but with an Assyrian element introduced. This one piece is sufficient to show that they made *cloisonné;* and the ivories found at Nimroud, as I have already said, suggest by internal evidence that they were designed on the lines suggested by the metal *cloisons*.

The Phœnician stone capitals found at Cyprus, and illustrated by Perrot and Chipiez,* have motives borrowed from this ivory work, showing how stone forms were borrowed from the *champlevé;* and again, a very early type of Ionic capital, illustrated in the same work, shows a transition from these Cypriote capitals, so that it would seem as if the Ionic capital is based through this medium on the *cloisonné* jewellery. A parallel case is the sarcophagus found by De Cesnola, which shows a form of antefiscal ornament half-way between the ivory *champlevé* and the later Greek form.

* "L'Art dans l'Antiquité." Vol. III.

The Hebrews.

It will be remembered that Solomon had Phœnician workmen from Tyre when he was building the Temple. From the fact that the Phœnicians used *cloisonnage*, we may infer that it would probably be used in the Temple; and from the descriptions, and from the fact that the Hebrew word translated "carve," means to cut or engrave (Smith's "Dictionary of the Bible"), in the accounts given, I am led to think it certainly was used there; but as no remains exist, it would take too long to pursue speculations on this subject.

Greece.

If we pass across the Ionian Sea to the sunny land of Greece, we find evidence of the *cloisonnage* system being know to the Greeks. In the archaic work of Mycenæ and Tiryns the peculiar spiral ornament found on the stone pillar at Mycenæ and other places, which Fergusson regretted we did not know more of, has now had its origin cleared up by the discoveries of Schliemann. It is evidently a copy in stone of a purely metallic ornament.

Mycenæ was a powerful fortress on a rock rising out of a level plain, and the royal residence of a warrior race, who loved architectural beauty and personal adornment. Armour, weapons, and utensils were of precious material, and most delicate and graceful workmanship. The palace was rich in colour, bronze, and alabaster.

The tombs of the Royal occupants have held the treasures now well known, which are largely of gold and bronze, and here we find the spiral lines and raised edges from which the ornament on the stonework was derived. A sceptre in *cloisonné* of gold, inlaid with rock crystal, was also found.

The timbers of the buildings and the doors were encased with plates of bronze, and slabs of alabaster, inlaid with glass and richly carved, decorated the vestibule at Tiryns. Metal plates were also used to cover the vault of the tombs of Attrius and others. It is generally admitted that early Greek work was largely metallic, and the descriptions in Homer refer to the use of metal decorations. This use of metal led to the use of an edge rather than to relief.

In the fully developed Greek art we find the goldsmith's work still carrying out the same idea. It is of filigree work and *repoussé*, with enamel colour used with the greatest restraint, and just enough in quantity to give contrast to the gold. The work is so refined and beautiful, so right in scale compared to the human figure, that one cannot imagine it to be surpassed; and we can guess what it must have looked like when adorning some lovely Greek. In later work this restraint and refinement disappear. Enamelled filagree is still made by hereditary Greek smiths, who have kept up the tradition of the ancient Greeks.

The bronze work shows the constant use of an edge in contrast with broad, rounded surfaces, and damascening with silver and gold.

If from the metal work we turn to the Greek architectural ornament, we find the same feeling prevailing. I have already mentioned the Ionic capital and the antefiscal ornament. In Ionic work, as at the Erechtheium, we find further evidences of the *cloison* principle. The plaited moulding of the capital was inlaid with coloured glass, as shown by Hittorf. The whole of the carving shows the use of the edge, as, for instance, in the frieze, where the flower ornament is an edge about half an inch wide, on a sunk ground, and this edge is again grooved on its surface, so as to produce yet other lines. The same character marks the egg and dart, and other mouldings above the frieze. If these were gilt, and the background coloured, as seems was the case, the effect would have been that of a *cloisonné*, full of sparkling light and colour.

In Doric work the painted ornaments on the moulding are, in design, quite a *cloisonné*. I have drawn out full-size mouldings from the Propylæa and the Parthenon, from data given by Mr. Penrose in his work, and a part of the ceiling design, and it will be seen how the sumptuousness of the colour* is still full of grace and refinement, due to the gold dividing lines. These coloured parts, far from hiding the beauty of the marble, would add to it by contrast. Whatever may be thought of Greek

* The medium used was encaustic, a mixture of wax and resin. The red pigment was oxide of iron; the blue, carbonate of copper; the white, carbonate of calcium (chalk); the dark green, Verona earth.

polychromatic decoration, which has been the subject of so fierce a controversy, one thing is certain, that they did use colour at the finest period, and they designed it on the principles of *cloisonnage*. If at a later time they discontinued it, it was contemporaneously with a decline in their art.

All through Greek work the edge seems to be used in contrast with the broad surfaces, and I cannot but think the Greek artists were fully conscious of the value of this system. The flutings of columns, the mouldings, and even the drapery of the figures (which is raised into ridges and deep groves) all carry on the same idea. Mr. Elsey Smith says, "One can still sit in front of the Propylæa at Athens, and watch the sun as it creeps round, gradually bringing out new lines of light,"

If this is so, does it not offer suggestions for our Renaissance work of to-day. For instance, may not the concave treatment be the right treatment for carved work for our London atmosphere? Relief work requires to be clean, and to have a fairly good light to be readable; but edge-work, no matter how dirty is the surface, how dull the light, will hold its own. Evidence of this may be seen by a comparison of the carved panels in the Foreign Office and Treasury. It is remarkable that, while particular *motifs* of Greek ornament have been copied *ad nauseam*, the principles on which the Greeks worked their ornament should have been so little used.

And, again, in the interior of large public buildings, where the relative value of colours must be soon destroyed by dirt, and made to approach uniformity, how greatly it would enhance and preserve the effect if the system of design were based on *cloissonnage*, so that a delicate weaving of gold lines through the whole would remain long after the purity of these colours was lost, and render the whole intelligible.

And bands of *cloisonné* could be used in conjunction with marble, as suggested by the mouldings of the Propylæa. The use of *cloisonné* with sculpture, as a means of introducing colour without loss of preciousness, is suggested by the coloured bands of the Parthenon.

I must now briefly continue the history after the Greek epoch.

Roman.

In Roman work, we come upon a gap in the history. For the first time, so far as I know, in the history of art, the edge system is lost, and gives place to rounded relief ornament. There is consequently a marked contrast between Roman and Greek ornament. May the explanation of this be found in the fact that hitherto, architectural ornament had been mainly flat polychromatic work, used in association with figure relief, and that under the Romans, colour and figure ceased to be generally used? However, traces of the *cloisonnage* system still remain here and there, as at Pompeii, where large numbers of borders are based on a type of design formed of yellow lines on some dark colour. Mr. Gardner showed us, the other evening, that quite important pieces of *champlevé* enamel were made for the Romans by the British, which goes to show that the Romans appreciated it when it was put before them, and large numbers of examples of Gallo-Roman *champlevé* have been found.*

* The remainder in our next.

SUGGESTED NEW SOURCES OF WATER SUPPLY FOR LONDON.

In our issue for the 4th inst. (p. 267, *ante*), we referred to the reports made by the Engineer of the London County Council (Mr. A. R. Binnie) on this subject.

Mr. Binnie, in his first report, after dealing with the statistical facts of the existing supplies, proceeds to speak of the possibilities of a future increased supply to be obtained from the Thames, the Lea, and the chalk. As to the Thames, in its present state, he shows that little or nothing is to be hoped for in that direction, in point of quantity, even if the quality were, or could be depended upon to continue, all that could be wished. He shows that the continued abstraction by the London water companies of from one-fourth to one-third of the total volume of the river in the height of summer, without affording one drop of "compensation water," must be highly detrimental to the river. Indeed, he says that the abstraction of such a large volume of water by the companies goes some way to explain the bad state of the river in recent years, for, he adds, "the purity of the fresh-water portion of the Thames above Greenwich is entirely dependent on the flow over Teddington Weir." As to the Lea, he quotes and endorses the opinion of the Royal Commissioners on Metropolitan Water Supply, 1869, that "we ought not to calculate on any material increase from this source." He, moreover, quotes from evidence given before the Royal Commission that at some periods the New River Company and the East London Water Company have taken the *whole volume* of the river,—"there was nothing went by" the intakes. This appears to have happened so far back as 1864, and is quoted as the evidence of the Engineer of the East London Company. As to the possibilities of further supplies from the chalk, Mr. Binnie quotes the conclusion of the aforesaid Royal Commission, which was as follows:—

"We do not agree with those who expect to get an almost unlimited increase of quantity of water by simply tapping the natural reservoirs in the chalk, for the supply of them must obviously be limited by the amount of rainfall. Moreover, as the water which penetrates into the reservoirs, raising the water line more or less above the level of the adjoining valleys, ultimately in greater part finds its way by springs into streams at the lower level of the district, any water drawn from the store by artificial means will most probably be at the expense of those streams.

If this be true, it follows that any water obtained by tapping the chalk reservoirs that feed either the Lea or the Thames above Hampton would only *pro tanto* diminish these streams, and would therefore be little or nothing gained to the general supply."

The summing-up of the Royal Commissioners on the subject of increased supplies from the Thames, the Lea, and the chalk was as follows:—

"Combining now these several sources, we may estimate that, if ever the Metropolis should increase to such an extent as to render necessary such a large supply, and to justify the outlay for works necessary to obtain it, we may calculate upon getting from the basin of the Thames—

	Gallons per day.
From the main stream, supplemented by the aid of store-reservoirs, say ..	220,000,000
From the Lea	50,000,000
From the chalk to the south and south-east of London	30,000,000
Or say a total of	300,000,000.

As Mr. Binnie remarks, it is clear that this supply of 300,000,000 gallons a day, at the rate of 30 gallons per head, would suffice for a population of 10 million persons,* "but, as stated, it can only be obtained by the construction of expensive impounding reservoirs in the upper valley of the Thames, to store the excessive flow of wet against periods of dry weather."

Mr. Binnie points out that one very important feature in which all the works which supply London differ from those constructed by large municipalities in other parts of the country is the absence of any supply of compensation water to be sent down the rivers in consideration of the quantities abstracted. It is no doubt, he says, partly due to this fact that the London water companies have been able to maintain so favourable a financial position as compared with other large municipal waterworks, and

"It becomes a grave question of inquiry, should the Council become the possessors of the existing works, and attempt to increase the supply, as suggested by the Royal Commissioners, whether Parliament would not require them to give compensation in water, and this should be borne in mind in fixing the value of the existing works, as neither the companies nor the Council can very largely increase the present supply without constructing some such impounding reservoirs as those suggested by the Royal Commissioners of 1869."

As to the quality of the water now supplied to London, Mr. Binnie says that notwithstanding the fact that the valleys of the Thames and Lea are thickly inhabited, almost entirely covered with cultivated and manured land, and that those rivers receive, in a more or less direct manner, the drainage of many towns, yet, as proved by chemical analysis, and the comparatively low death-rate of the metropolis, the water supplied from these sources is fairly good and wholesome. "In other words, it would appear that, if properly filtered, river water, to a certain extent and under certain circumstances very considerably contaminated by town drainage and the flow from manured lands, may be supplied without injury to the health of the population; *but this opinion must be taken with a certain amount of reserve, as our experience is hardly sufficiently wide, and in the case of the Thames has never been tested under the conditions which would subsist were a severe epidemic of cholera, typhoid, or other virulent epidemic to break out in any of the towns which drain into it.*"*

"It becomes a very important subject of inquiry" (continues Mr. Binnie), "granted that sewage from healthy towns is not deleterious to health when mixed with river water of a sufficiently large volume which has travelled down the stream for some miles, what would be the risk to the health of the metropolis supplied with water from the Thames, in the case of any serious outbreak of infectious or contagious disease in any of the towns draining into it."

With regard to other possible sources of supply, Mr. Binnie says that the quantity required to be provided is so large as to render wells and pumping almost out of the question, except as an auxiliary to some other project. Consequently, as we must, before all things, obtain a supply unimpeachable on the question of quality, it will be necessary to resort to some comparatively uncultivated area on which there is a heavy rainfall, as the amount of the latter will largely affect the size and cost of the works. Such areas are only to be met with among the higher hills and mountains of this country, in Cumberland, Wales, and Devonshire, where the rainfall amounts to from 60 to 100 in. per annum, as compared with, say, 27 in. on an average in the Thames Valley.

Dealing with the Welsh schemes, Mr. Binnie reports first on the Upper Severn scheme, which was first suggested by the late Mr. J. F. Bateman, F.R.S., as far back as 1865. Mr. Bateman proposed to derive the supply from a total catchment area of about 204 square miles, or, say, 130,500 acres, on the tributaries of the upper parts of the Severn about Welshpool, Newtown, and Llanidloes, known as the Vyrnwy, Banw, Carno, Tyrannon, Clwedog, Tylwch, &c. The flow from this area was proposed to be stored in seven reservoirs of a united capacity of 6,709,000,000 cubic feet, or 41,932 million gallons, and from which Mr. Bateman proposed to obtain 230 million gallons per day for the supply of London, after giving out as compensation to the streams 73 million gallons a day, these calculations being based on an average annual rainfall of 75 inches, of which 36 inches would be available for supply and compensation. But Mr. Bateman also pointed out that, if required, the supply could be increased to 300 million gallons a day. The water, as tested by Mr. Bateman, and afterwards by the Royal Commissioners, was found to be of good quality, containing only from 2¼ to 4½ grains of solid matter per gallon, little organic matter, no traces of pollution, and having a hardness of 1 to 2 deg. Mr. Bateman proposed to convey the water to London in a conduit starting at a level 450 ft. above the sea, which, passing by way of Marten Mere, near Montgomery, and the towns of Bridgnorth, Stourbridge, Henley-in-Arden, Warwick, Banbury, Buckingham, Aylesbury, Tring, Berkhampstead, and Watford, would, after a course of about 180 miles, terminate near Stanmore, at an altitude of 270 ft. above the sea. At Stanmore he proposed to construct service reservoirs of a capacity of 2,000 million gallons. Mr. Bateman's estimate of the cost of this scheme was based on the works being carried out in instalments, as the requirements of the metropolis might necessitate, the expenditure being spread over four periods, as follows:—

Instalments.	To supply million gallons per day.	Cost.
1st	130	£8,685,006
2nd	170	10,571,615
3rd	200	10,822,474
4th	230	11,400,023

The practicability of getting a supply from the district indicated, as to the construction of reservoirs, the quality of the water, and the advantage of going to a great distance to procure a pure, wholesome, and uncontaminated gathering-ground, has since been proved, says Mr. Binnie, by the fact that the City of Liverpool has obtained Parliamentary powers, and has constructed works, under Mr. Thomas Hawksley and Mr. G. F. Deacon, to take the water of one of the identical streams proposed, viz., the Vyrnwy, and convey it a distance of about

* According to the last annual report of the Local Government Board, the average daily supply afforded by all the Metropolitan water companies together for the year ending December 31, 1889, was 166,942,483 gallons, which gives an average of 29·91 gallons per head of the average daily population, then estimated at 5,581,491.

* The italics are ours.

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sixty-six miles to Liverpool. This Liverpool scheme, by deducting some 18,000 to 20,000 acres of gathering-ground, reduced by that amount Mr. Bateman's proposed area of 130,500 acres, but sufficient still remained, and the area could be added to and increased, if required, to suit the demands of the metropolis.

Mr. Binnie next refers to another Welsh scheme,—that which proposes to go to the region of the Upper Wye for its gathering-ground. This scheme, Mr. Binnie believes, was first projected by the late Mr. H. H. Fulton, and brought before the Royal Commission in 1867. He proposed to appropriate a gathering-ground of about 440 square miles, or 281,600 acres, on the Upper Wye above Hay, Builth, and Rhayader, extending to the slopes of Plynlymmon. This district, with an average annual rainfall of 60 in.,—of which 30 in. would be available,—Mr. Fulton calculated would yield a supply of 393 million gallons a day for London, and give 131 million gallons a day as compensation; but in the first instance he only proposed, by the construction of six reservoirs, to bring into London 230 million gallons a day. His proposed conduit commenced near Rhayader, at a height of 590 ft. above the sea, and passing near Glasbury, Hay, Kington, Ludlow, Tinbury, Bewdley, Stourport, Bromsgrove, Henley-in-Arden, Warwick, Banbury, Tring, and Watford, to a point near Barnet, it terminated at an altitude of 276 ft. above sea-level. His estimated cost was, for 130 million gallons a day, 7,000,000*l.*, and for the remaining 100 million gallons, 2,000,000*l.*, or a total of 9,000,000*l.* for 230 million gallons daily. There can be no doubt, Mr. Binnie says, that this district yields water of great purity; its drainage areas are uncontaminated, and it was favourably reported upon by Sir Robert Rawlinson as a suitable source for the supply of Birmingham.* From some years' residence in the centre of the district, Mr. Binnie says he is able to bear testimony to the suitability of both this and the Upper Severn as sources of supply for London.

Mr. Binnie next refers to the Cumberland lakes scheme,—Thirlmere, Ullswater, and Haweswater. This scheme, he points out, was brought before the Royal Commissioners in 1867-69 by the late Mr. G. W. Hemans and Mr. Richard Hassard, who proposed to appropriate the lakes Thirlmere, Ullswater, and Haweswater, with a united gathering ground of 177 square miles, or 113,280 acres, and by embanking the lakes, to form reservoirs to contain 5,563 million cubic feet, or 34,658 million gallons. With a total annual rainfall of from 80 to 100 inches and an available 50 inches, they calculated on a supply for London of 287 million gallons daily, after giving 63 million gallons a day for compensation. The conduit starting from Ullswater would be 270 miles in length, terminating in large service reservoirs of 3,750 million gallons capacity, situated near Edgware. The total estimate for the scheme was put at 13,500,000*l.* As in the case of Mr. Bateman's Welsh scheme on the Upper Severn, so in this case also, Mr. Binnie reminds us, the practicability of the works, the suitability of the uncontaminated gathering-ground, and the consequent purity of the water, has led the City of Manchester to obtain powers for the appropriation of Thirlmere, the works being designed for them, to deliver fifty million gallons a day, by the late Mr. Bateman. These are now being carried out, including conduits over 100 miles in length, to convey the water to Manchester, by Mr. G. H. Hill.

Finally, Mr. Binnie himself directs attention to Dartmoor as a possible source of future supply the examination of which might be undertaken on behalf of the London County Council. He says he is not aware that this district has been previously suggested as a source of supply for the metropolis, but its elevation, heavy rainfall, and clean granitic gathering-ground, make it a site where good water could be obtained, and its distance from London, some 180 to 200 miles, is within reasonable limits.

Mr. Binnie adds some remarks on the advantage of gravitation works. He says that one great point in favour of any of the schemes thus briefly described is that they would bring in a supply by gravitation without pumping, and deliver it at an altitude of some 270 ft.,—that is, approximately 80 ft. above the reservoir of the West Middlesex Company near Primrose Hill, 30 ft. above the top of the Monument, 28 ft. above the top tower of Westminster Abbey, and about 240 ft. above the level of the Thames, from which the supply is now pumped. So that not only would the water be brought from Wales, Cumberland, or Dartmoor by gravitation, but delivered over almost the whole of London under constant pressure, without pumping; the only exceptions being districts immediately around the Hampstead, Highgate, and Sydenham hills, the extreme summits of which rise to altitudes of 421, 424, and 370 feet respectively. How important an expense pumping is under existing circumstances may be judged of when Mr. Binnie says he finds that the eight companies who supply London expended in 1879 a sum of over 188,000*l.*, and this was quite independent of storage, filtering, or interest on capital, and represents, at twenty years' purchase, 2,360,000*l.*; and, of course, this charge must be greater at the present time.

Mr. Binnie, in concluding his report, says he is not ignorant that there may be other schemes which may claim consideration; but he thinks that those he has named first demand attention as having been so long before the public, and as having already, in the case of the Severn and Wye, received the attention not only of engineers of the highest standing, but also such large corporate towns as Liverpool and Birmingham.

Mr. Binnie's second report is entirely devoted to the consideration of the question of compensation water.

* As we announced a fortnight ago (p. 277), the Corporation of Birmingham have now under consideration the adoption of this source for an extension of their supply.

COMPETITIONS.

BATHS, BACUP.—The Baths Committee on the 13th inst. accepted the designs of Messrs. Mangnall & Littlewoods, architects, Manchester, and have also accepted tenders for the work, amounting to 7,500*l.*, presented by the late Mr. Henry Maden. The baths include first and second class swimming baths, first and second class slipper baths, and Turkish baths. The premiums were originally awarded as follows:—First, Mr. Wilson, Assistant Borough Engineer; second, Messrs. Mangnall & Littlewoods; third, Mr. Wilson, sen., Borough Engineer. But the estimates from Mr. Wilson, being unsatisfactory, were rejected by the Committee.

NEW BATHS FOR HALIFAX.—The *Leeds Mercury* states that in the competition for new baths at Halifax the plans of Messrs. Horsfall & Williams were selected. Mr. Raymond Berry's plans were awarded the second place. Messrs. Utley & Gray were third.

A NEW WESLEYAN CHAPEL FOR CONSETT.—In a recent competition for a group of buildings, comprising chapel to accommodate 1,000 persons, together with schools, lecture hall, &c., at Consett, Durham, the set of plans bearing the motto, "Comfort, Convenience, and Economy," were selected, the successful architects being Messrs. Lamb, Armstrong, & Knowles, of Newcastle.

Illustrations.

NEW MAIRIE, SURESNES, PARIS.

THE new Mairie built not long since on the high ground at Suresnes, opposite the Bois de Boulogne, was gained by the architect, M. Bréasson, in a public competition in which no less than seventy-nine French architects took part.

The building includes on the ground floor all the administrative offices. A fine staircase leads to the Salles de Réception on the first floor. These rooms, three in number, have still to be decorated. The building was commenced in 1887 and completed in 1889, at a cost of 460,000 francs.

COMPETITION DESIGN FOR BATTERSEA POLYTECHNIC INSTITUTE.

THE design for the Battersea Polytechnic, which is illustrated this week, is the one contributed by Messrs. Roger Smith, Son, & Gale in the final competition. It is, in accordance with the stipulated conditions, an elaboration of the preliminary design, the ground-plan of which we also publish, and has not been materially altered in any way, a few minor changes in the arrangement of certain rooms only have been made where required by the amended instructions. The perspective, indeed, has served for both stages of the competition. The building is arranged with straight and well-lighted corridors, and is planned to form a double quadrangle so as to give complete circulation and ready intercommunication between the parts, while providing for their isolation if desired. Each department on the ground floor is provided with a separate entrance, while, at the same time, every department is readily reached from the main entrance, which can be used as the only one when required. A considerable area on the ground floor is left for future extension, which can also be readily secured on the first and second floors, thus rendering it possible to extend every department should occasion arise.

The ground floor contains to the right of the entrance the administrative department, on the left the men's social department, and beyond it the women's social department, with separate entrance. The gymnasiums and bath are arranged together, near the social departments; are outside the main building, and top lighted. The shops belonging to the department of technical education form a compact block in the rear of the building, and are lighted with windows and also skylights on the saw-tooth system; each of those where bulky material may be used has an external door. The hall, which is the most important single room of the building, has not only been placed at one side of the site, where direct egress is most easily secured, but has also been brought to the front, as befits its importance. This hall, which is elliptical on plan, has been specially designed with a view to its being used for public meetings or entertainments of various kinds, as well as for the purposes of the polytechnic itself. It is, therefore, arranged to meet the requirements of the County Council, and while readily accessible from the main building when so required, can be entirely shut off from it without in any way interrupting the communication between the various parts or causing any inconvenience in its working. A tower has been provided for the large water tanks required by the County Council regulations, and ample staircase accommodation is provided.

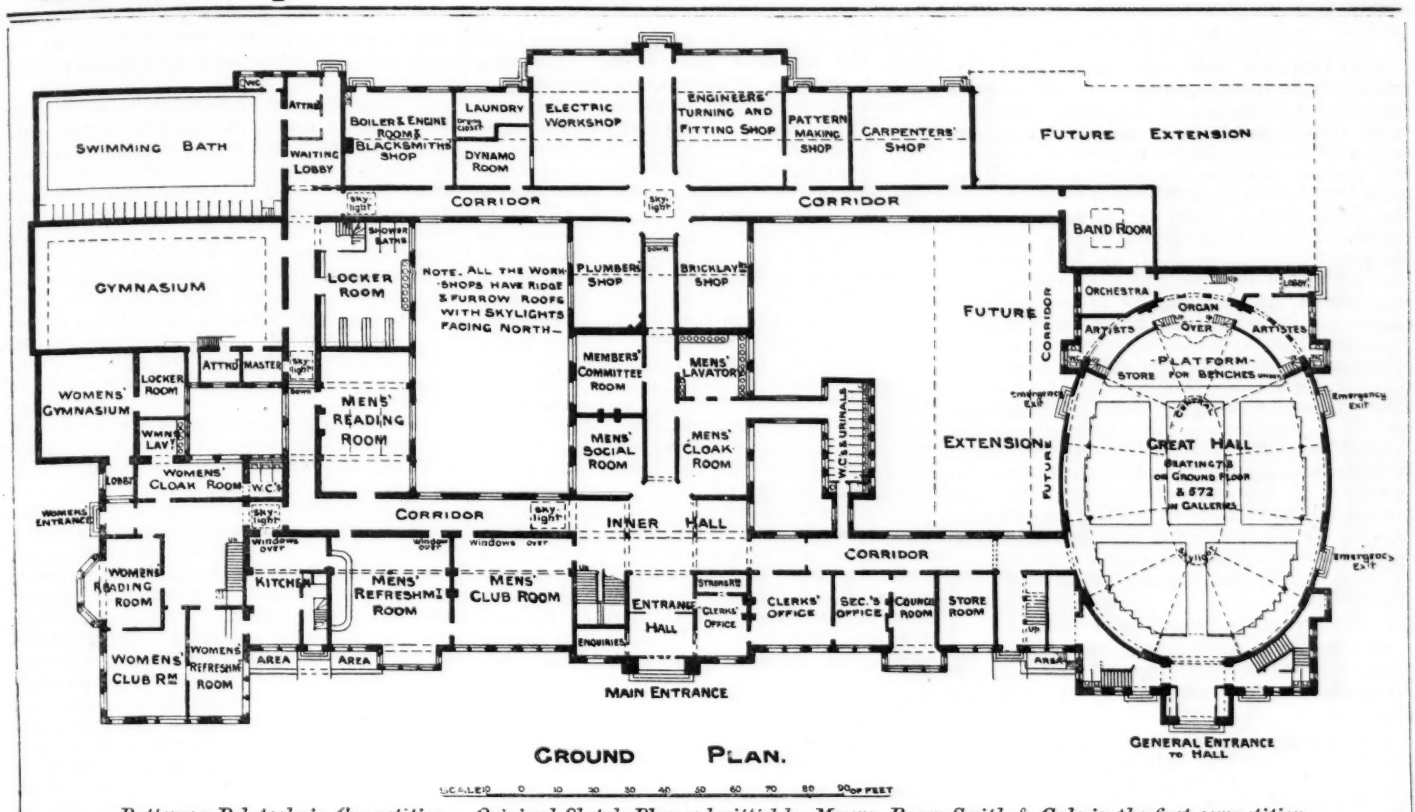
The first floor contains the women's technical school over their social department, and portions of the men's technical department, including the music-rooms (placed also near the women's rooms), entirely isolated and sound proof, the technical library placed centrally, and the majority of the class-rooms, and one of the lecture theatres. This arrangement is specially intended to fulfil one purpose suggested for the building by the Committee, viz., that it should be used as a boys' school for general and technical education by day.

The second floor contains the art school and photographic rooms, with northern skylights, the chemical and physical laboratories, lecture theatre and class-room.

The exterior has been kept very plain by instruction of the Committee, and the authors have sought to produce architectural effect by the disposition of the masses and parts of the building, rather than by the use of ornament or decoration. The materials suggested for the exterior are stock and red brick and terra-cotta, with tiled roofs to the main block, and slated roofs to the brick buildings. A system of artificial ventilation, as well as a very thorough natural ventilation is provided, and the heating is arranged to be by hot water. The estimated cost of the building is 39,850*l.* R. S. AND G.

THE BAUDRY MONUMENT, PÈRE-LA-CHAISE, PARIS.

THIS monument to Paul Baudry, the painter (best known to Englishmen by his decorative paintings in the Paris Opera House), is a fine example of the artistic spirit in which the French carry out monuments of this kind. They do not go to a commercial producer of cemetery monuments, but get the best artistic power they can to bear upon the work. In this case the general architectural design is by M. Ambroise Baudry, a relative of the deceased painter; the bust by M. Paul Dubois, and the two figures by M. Mercié, one of the greatest sculptors of the day. The fine and truly sculpturesque manner in which the figure at the foot of the monument is indicated under the drapery is especially noticeable. The inscription consists merely of the simple words, "A Paul Baudry ses admirateurs et ses amis;" nothing could be in better taste.



Battersea Polytechnic Competition.—Original Sketch Plan submitted by Messrs. Roger Smith & Gale in the first competition.

MILDMAY MONUMENT AND WALDEGRAVE MONUMENT.

THE two plates illustrating these monuments are reproduced (to considerably smaller scale) from M. Frederic Chancellor's work on Monuments in Essex Churches, a notice of which appears in another column.

THE LATE MR. JOHN DRAYTON WYATT.

BY the death of Mr. John Drayton Wyatt, which occurred on February 22 last, the architectural profession lost one of its best draughtsmen and most earnest workers. Mr. Wyatt was born at the old Manor House, Nailsworth, in Gloucestershire, on December 11, 1820, and was the descendant of two old Gloncestershire families, the Wyatts and the Draytons, who had for many generations been resident in the county. His mother was a descendant of Michael Drayton, who appears to have been Poet Laureate in the time of Queen Elizabeth, and also of Sir John Box, who was a distinguished citizen of Gloucester, and Mayor of that city in successive years. He was brought to London by his father, Dr. Peter Wyatt, a prominent sanitarian in his day, and one of the first who protested against intra-mural interments, and who commenced medical practice in Islington in 1827. From his earliest youth John Drayton Wyatt showed great abilities, especially in drawing, in which he excelled at University College School, where his education was completed. This induced his parents to select architecture as his profession, and in 1837 he was articled to Mr. H. W. Inwood for three years, before the expiration of which term he prepared the requisite drawings for "probationership" for the Royal Academy, and ultimately became a student. He always retained his interest in the Royal Academy, and, unless prevented by unavoidable circumstances, was a regular attendant on the annual prize nights.

In May, 1841, Mr. Wyatt obtained an engagement as an assistant-draughtsman in the office of Messrs. Scott and Moffat, of Spring-gardens, and on the dissolution of partnership, remained with Mr. (afterwards Sir Gilbert) Scott, and became one of his principal assistants. He was a great favourite with Sir Gilbert, who so keenly appreciated his rapid method of preparing accurate detail drawings, that whenever a push occurred and details were required to be done hurriedly before post time, they were always sent up to Mr. Wyatt. During these days he was known as "Scott's Wyatt," a *sobriquet* to distinguish him from Matthew and Digby Wyatt.

During the period he was with Sir G. Scott Mr. Wyatt prepared most of the drawings of executed works for illustration: a far more difficult matter then than at present, and often extending to actual drawing on the lithographic stones. Probably his large practice in this class of work led to his being such a very fine architectural draughtsman. In perspectives for illustration he may be said to have been unequalled. His style closely resembled that of the late George Hawkins, who died about forty years ago, and who was, in his time, considered by many the leading perspective draughtsman.

Mr. Wyatt also made an elaborate measured drawing of St. Michael's Tower, Coventry, every dimension for which was taken by himself at considerable risk; in fact, the whole was a personal work, and occupied many months of labour in execution. Having been conducted when the decay, although considerably advanced, had not gone so far as to obliterate mouldings and ornamentation, his dimensions were of the greatest use in enabling the tower to be restored. In 1842 he assisted in the formation of the British Association of Architectural Draughtsmen, which, in 1848, became the Architectural Association, of which he was President in the years 1850-1-2, and was presented with an elaborate box of instruments, as a token of the regard his fellow members had for him. These, however, he always looked upon as too good for everyday use, and all his life he used the same little case of instruments, measuring about 4½ in. by 3 in. that he had when a pupil. Mr. Wyatt was appointed Diocesan Architect by the present Bishop of Bath and Wells when Archdeacon, and in 1867, having for a considerable period devoted much of his time to private work, he finally relinquished his work for Sir Gilbert Scott, and only undertook his own practice, which was chiefly connected with ecclesiastical buildings. He restored St. John's, Wolverhampton, designed and superintended Christ Church, Gretton, of which the erection was mainly due to the munificence of Mrs. Dent, of Sudeley Castle; and executed many other works in the neighbourhood; but the work he loved most was the restoration of Sudeley Castle, in which, associated with Sir Gilbert Scott, and independently, he was engaged for thirty-five years, the work having been still in progress at the time of his decease. His works in the neighbourhood of Sudeley Castle are enumerated in a memorial tablet in the chapel, the inscription on which, considering the historical and antiquarian importance of the Castle, it may not be out of place to quote here, as follows:—

"The following works in this locality were carried out from the designs and under the superintendence of Sir Gilbert Scott, R.A., and J. Drayton Wyatt, architects, London:—

The restoration of the church (1863) and of the buildings on the west side of the lower quadrangle (1867); also in Winchcombe the erections of Dent's School; School House (1867) and Almshouses (1865).

The following works were carried out from the designs and under the superintendence of the above J. Drayton Wyatt:—

The erection of Christ Church in the hamlet of Gretton (1868); the restoration of the parish church of Winchcombe (1872); the restoration and enlargement of the Jacobite House (1879); the rebuilding of the 'Three Gables' in Gloucester-street (1882), and of the Pilgrims' Gallery at the George Inn (1884); the conversion of the Wesleyan Chapel into school buildings (1886); the new west gateway to Sudeley Castle, with the adjoining buildings, and the entrance-lodge, in the Jubilee year of Queen Victoria's reign (1887); in the same Jubilee year, the restoration of the Conduit-house of St. Kenelm's Well, in commemoration of the water being then conveyed to Winchcombe."

An accomplished architect and antiquary, Mr. Wyatt passed a busy, useful life, of which not a day was ever wasted. His art was his delight, and he succeeded in infusing great interest in their work in the workmen engaged on his buildings, who became greatly attached to him; while in social life his genial temperament and never-failing good humour endeared him to all his friends, by whom his loss will long be mourned. O. C. W.

THE ARCHITECTURAL ASSOCIATION.

THE ordinary fortnightly meeting of this Association was held on Friday, the 10th inst., at 9, Conduit-street, Mr. Leonard Stokes, President, in the chair.

Mr. F. R. Farrow, Hon. Secretary, announced that Mr. Edmund Woodthorpe had given a number of volumes of the *Builder* to the Association for the Reference Library. A vote of thanks was accorded to the donor.

Mr. Earle announced that a photographic club was being formed in connexion with the Junior Sketching and Measuring Class.

The President referred with satisfaction to the fact that the list of members wishing to subscribe a guinea a year instead of half-a-guinea, now reached 100 names. Upon this,

A member, whose name did not transpire, asked what really was the rule as to the amount of the subscription? He was under the impression that the rule said that the subscription should be half-a-guinea per annum, and it appeared to him that members of the Association were breaking the rule by paying a guinea, unless they gave the extra half guinea in form of a donation.

The President said that the extra half guinea was really given in the form of a donation.

Mr. Farrow then, in accordance with the rule appertaining thereto, brought forward the Committee's list of officers and committee for the ensuing session. This, he explained, was only the list of gentlemen whom the Committee had ascertained were willing to serve, but it was open to the members to nominate other gentlemen to serve as officers or on the committee. (We may mention here that in this list Mr. F. T. Baggallay is nominated as President.)

Death of Mr. J. D. Sedding.

The President said:—It is now my lot, gentlemen, to have to perform the most painful duty that I have had to discharge from this chair during my term of office. I dare say several of you are already acquainted with the sad fact to which I am alluding, but at the same time I have to announce it formally from the chair, and I wish you to express your regret,—as I am sure you will,—when you hear that our friend and member, Mr. J. D. Sedding, died within the last few days. Everybody who has known Mr. Sedding, as I have had the honour of knowing him, will bear testimony from their hearts that they never knew a more genial man, that they never knew a man more enthusiastic for his art, and that they never knew a more thoroughly artistic and capable architect. Gentlemen, it is a great loss to this Association that we have just sustained. Mr. Sedding was always very keenly alive to the interests of this Association; and he was always willing to help us in every way that he could. We all thoroughly and heartily regret his loss, and we propose to send a letter of condolence to Mrs. Sedding in the name of the Association.

Notes of the Travelling Student.

Mr. Percy D. Smith, holder of the A. A. Travelling Studentship 1890-91, then read the following notes of his tour in the West of England.

It is my pleasurable duty to commence the description of my tour this evening by thanking you sincerely for awarding me the Travelling Studentship for the past year, and I trust that you will find my work a sufficient justification for your award.

On reading the late Mr. Street's papers, published in the Royal Institute of British Architects' "Transactions" last April, I was struck with a pithy finish to one of them: "That he learnt his art by tramping through the country, with knapsack on back, and studying anything and everything that came under his observation." Therefore, I determined to follow the great master's steps, and "go and do likewise," but in a more modern spirit, viz., with the aid of the bicycle. I found several difficulties; first, the transport of baggage; second, the selection of the most suitable route; and lastly, in my work. You will perhaps notice that all my sketches are rather small in scale, necessitated by the difficulty of carrying on the machine anything larger than a quarter imperial board, the measured work I show having been worked out from my measurements and sketches on my return to town. Before starting my tour proper, I had a preliminary week in the Witney district, with a friend, visiting Fairford, to which place I paid a longer visit on my return journey, also visiting Down Ampney (measuring the church porch). The old manor there, originally built by the Hungerford family, is now very much modernised, and, though the Henry VII.'s entrance lodge and gate is an excellent building, it has little charm for the architectural student, being so covered up with ivy. After visiting Bibury and Burford, and several villages in the district of little interest, I finished up with a day at Minster Lovell, just the day previous to the Excursion visit there, measuring the porch and ante-room on the north side of the great hall.

My tour proper commenced on August 25, when, starting from Bourton Hill as my headquarters, I went to Chipping Campden, and made a sketch of the almshouses; and bad weather having driven me into the church, I made a measured sketch of the seventeenth-century pulpit. This venerable three-decker I heard had been cut down to its present height to suit the late parson, who, I understand, was of exceeding short stature.

The church has been restored (with a query) rather too lavishly by sweeping away all the old oak benches which were finely and wondrously wrought with the arms of the patrons of early days (cloth merchants generally), and substituting pitch-pine seats of a uniform height; and, to add to the bizarre effect internally, all the stone joints (rubble walling) have been picked out with black joints on a very white ground, giving a curious cobwebby effect, relieved, however, by the arches being pointed in white, so as to look as if formed of a single stone.

I then measured the garden pavilion at Campden House, to which I will refer later. At Campden I was able to make a sheet of good "bits" (the sun-dial there being especially notable). I can thoroughly recommend the place for a week's good study. Bicycling through Subedge, Willersey, and Saintbury, a district where one finds in profusion the good old quiet and simple "lintel and mullion" style of work, entirely devoid of any pretentious confectionery adornments, simple and massive, one can learn a few useful hints. On leaving Gloucestershire I arrived at the village of Broadway in Worcestershire, which nestles in a lovely valley at the foot of one of the steepest hills in England. It is "a favourite resort of artists, architects, and Americans," to quote the Guide-book, and no wonder, for it is a very picturesque village under the Cotswold Hills. I stopped at the "Lygon Arms," an ancient hostelry with oak-panelled rooms and staircases, modelled plaster ceilings, and large stone mantels,—in fact, a perfect museum for an architectural student. Saturday, August 30, was spent in an excellent coach drive to Cheltenham and back. There being nothing in Cheltenham to interest me, I took the train to Gloucester for a preliminary look round, and to present a letter of introduction, and returned to Cheltenham just in time to catch the coach back to Broadway, which I left on Sunday, trundling through Child's Wickham and Hinton, arriving at Evesham, where there are two churches within the same churchyard, a path only dividing the two parishes of All Saints' and St. Lawrence. The Perpendicular vaulted baptistery adjoining the south aisle in All Saints' Church is much too good for the font.

The half-timbered work here is rather quaint and good, and I noticed the oak door-frames in this town wrought out of 6 in. by 5 in., with a simple deep moulding terminating in a stop at the bottom, which really puts our modern architrave out of 4 in. by 1¼ in. to the blush. Supposing this 4 in. by 1¼ in. were added to the 4 in. by 3 in. posts, and had a decent moulding worked on the solid instead of the wretched flat and sprawling arrangement of grounds, &c., I should be quite happy about it. There is ample room here for improvement at little or no more cost.

A chimney and an old gateway is all that now remains of the monastery destroyed by Cromwell.

Passing on through Cropthorne and Wycke Chapel we get entirely out of the stone district and find chiefly the half-timber work which I have illustrated by a few wayside notes. I halted at Pershore for a repair to my steed and for a look at the vaulted church which is formed of the choir and part of the crux, the only remaining portions of a fine Early English monastery chapel. The lantern tower at the west end (a restoration, I believe), is very clever. From Pershore I went through some hop country to Norton, which looked very inviting on the map but only boasts a "Jubilee" church and a barracks; so improving my pace to compensate for the fruitless divergence, I raced into Worcester for a week's sojourn. I may here mention that my work there is hardly a typical week's work, owing to an odd visit or two to the cathedral for the Musical Festival. My chief work here, however, was at the Commandery,—tenanted as a printing office by Mr. Littlebury, an architectural enthusiast, who kindly gave me the free run of the place and every facility for working there. The glass is curious. It is in two colours, brown and yellow only, the birds being drawn with much spirit, though conventionalised. I measured while there the staircase and bench-end.

My next stop was at Tewkesbury. I originally intended to go to Ledbury, to see our old friend the Market-house there; but the hot weather and the journey across the Malvern Hills and back,—well, I didn't. Uninteresting as was my seventeen miles ride to Tewkesbury, I was amply repaid by the good sights there. It is a pity they don't put a door in the old cloister archway, instead of leaving it blocked up, and so give students a chance of seeing more of it. Sir Chas. Barry made a replica of it, however, in the Peer's doorway in the Parliament houses; but, of course, one prefers studying the original article.

Since my visit, I hear that Mr. Collins, a well-known local builder, who restored the church and half the town, has undertaken to restore this door and archway at his own expense, under the direction of Mr. Scott.

En route to Gloucester I tried Deerhurst, and was disappointed with the church, a divergence of four miles just to see this fine modern Saxon church, with a triangular head in the tower. I really expected to see more after all we read in "Parker."

At Gloucester, my introduction to Mr. Waller, the Diocesan Surveyor, obtained for me his kindly assistance and *entrée* everywhere in the Cathedral. I measured the fifteenth-century sedilia in the Lady Chapel, and took a few other notes in the cathedral and town. While here I visited the late Mr. Gambier Parry's beautiful church, situate a mile out of the city, at Highnam. It is well worth a visit, but I am sorry to say that the lovely painting there is denied to the sketcher. Another seventeen miles to Cirencester, and at the top of Birlip Hill, we run into the stone country again. [Query. Why are the Roman roads so awfully uninteresting?] Not a single village for seventeen miles, until Cirencester is reached. I stopped at Cirencester for the night, had a look round the church, and left at once to visit Fairford again.

The church here, we learn, was commenced in 1493 by John Tame, whose monument I sketched. He is recorded to have taken a vessel bound from a Flemish port to Italy, laden with painted glass, when he conceived the idea of building a church to take it. He chose Fairford, where he had come to live, and, dying in 1500, the work was completed by his son. The windows are ascribed to Dürer, and they certainly look like his style. The whole of the glass has been taken out and re-leaded throughout, and the missing portions restored with stippled glass. More restoration of this sort would be welcome. The glass is stippled up just to show the form of, say, a face or a limb, with no attempt at drawing it again, and not, as I have seen in some churches, — nay, a good many, where the enterprising vicar or rector had taken the least dilapidated window in his church, stuck it up in one of the most prominent openings, and crammed, in a higgledy-piggledy way into all the missing spaces in the composition, with no regard to fitness, all the lesser portions and bits from the other more dilapidated windows, and then refer to it blandly as "the most ancient window we have in the church." My last day at Fairford completed a five weeks' tour, and, funds getting short, I started for Bourton Hill, my headquarters, by Sherborne, Clapton, and Stow-on-the-Wold, where I made the sketch of the interesting old stocks still preserved there, as such things are, alas! fast disappearing all over the country. I carefully avoided the direct Roman-road to Stow, and preferred to see the villages of Sherborne and Clapton, though I somewhat repented it because of the heavy work on the bridle-road as compared to the genuine Roman article.

To conclude, I will just refer to a few notes I have made in my study of Campden House. Few mansions have had a fuller series of possessors than what are enumerated of Campden, by Sir Robert Atkyns. Of these, the principal were the great Barons de Somesi, Clare de Audley, and Stafford. Queen Elizabeth found it vested in the Crown, and granted it to the family of Smith, of whom it was purchased, in 1628, by the famous Sir Baptiste Hickes, Viscount Campden. Upon his purchase of the manor, Sir Baptiste built a most sumptuous mansion, with accompaniments of corresponding magnificence, which was destroyed by fire, during the Civil Wars, by command of Baptiste Hickes, Lord Noel, grandson of Sir Baptiste, that it might not be seized by the Parliament. I quote from the inscription on his tomb:—

"His eminent loyalty for King Charles, notwithstanding his inestimable losses in his Estate, Spoil and Havoc of several of his Houses, besides the burning of that noble pile of Campden," &c.

This very disinterested conduct proved in the sequel quite unnecessary, as the enemy approached not nearer than Evesham and Warwick.

I read that the "noble pile" was enriched with friezes and entablatures most profusely sculptured, and reported to have cost £29,000, and part of a wall discoloured by fire and the two banqueting houses which terminated the terrace, are the only remains worthy of notice. I also gather from another source that the founder employed "the most eminent architect that age afforded," but his name is not known. The alms houses and market-place which he gave to the town are characterised by similarity of style.

The east pavilion or banqueting house, which I measured, has been "restored," that is to say,

it has been denuded almost entirely of work that might have been repaired.

In my drawings I have endeavoured to replace work from parts remaining (though in a decayed state) in the west pavilion. I conjecture that these pavilions were intended to have coved roofs, if they were not actually constructed. The plaster frieze and cornice remaining in the western pavilion actually show the starting of the cove ceiling, though whether this was intended to be painted or decorated with panels or embossed cast work, nothing remains to explain. Certain it is, however, that these pavilions were never completed, as may be concluded from some of the unfinished carving and moulding left, so perhaps the coved ceiling was never made.

The construction of the roof I think also decides that a cove was intended. To further this idea of non-completion, I may mention that the chimney-flues and openings have no fire-stains, evidently showing it was not occupied as a habitation for mankind, though that it has been, and is still, a habitation for cows I am sorry to say is plainly evident. This Campden House is doubly interesting to the student, inasmuch as it seems to have been partly destroyed soon after its erection, and no endeavour has ever been made to render it once more habitable. It is curious to notice the moulding of the panelling. The first rail from the floor being much deeper than the rest, and the moulding next below being omitted, the side mouldings are there as usual. Was this moulding omitted because a seat had been fixed just above it? in which case the moulding, if put there, would be hidden. Twenty inches off the floor, however, seems rather high according to our modern notions of comfort. I should like to get some indisputable heights of early seats, as our modern copies seem very low, and measurements of antique furniture must be taken *cum grano salis*, considering that the feet of chairs, &c., are always the first to get decayed, and are generally cut down as they get rickety with age and usage Perhaps, however, in this case the seat was raised higher than usual, so as to afford a view from the window when the "viewer" was seated, the sill (glass line) being 3 ft. 9 in. high. It is curious to note how the centres of the gables are out of centre with the windows below them on the east side. They have been made to centre with the arch piers on the west, or terrace side.

And now, one more note, as to the ways and means of the studentship, which may be of some use to intending competitors. I sincerely hope the prize committee will not take what I am about to say as ingratitude on my part. This is furthermost from my intentions. Two years back I was seized with a desire to get the studentship, and I was rash enough to get up and ask the student then reading his paper, how the thing was done. A laugh was distinctly audible. Anyway, the information received, made it look tolerably easy and I tried for the studentship, and was rewarded on both occasions. Now, I don't want to disparage aspirants to this Association honour, but I must say with the poet, Pope:—

> Who pants for glory, finds but short repose;
> A breath revives him or a breath o'erthrows.

"Glory" is the sum-total of the reward—after expenses are paid. As a speculation, it is a bad financial investment, so don't attempt it on these lines.

Twice it has been my happy experience to succeed in the competition for the Studentship prizes, but what about the cost? My first attempt involved a two months' stay at Chichester, and a week sketching at Cambridge and Ely. "Include for travelling, labour, and materials." My second involved six weeks' sketching in France, and two months' measuring at Christchurch, Hants. Result, the Studentship—grand total, £25; expenditure, nearly £50! Possibly, when the contemplated increase in the amount of the subscription to our Association is an accomplished fact, a course which I for one respectfully support, the financial inducement to competitors for the Studentship will be also increased. I would venture to suggest also whether students should not be encouraged to study architecture rather than mere expertness in draughtmanship. Whilst venturing, Mr. Chairman and gentlemen of the Committee, to criticise the financial results of my success in this competition, permit me to express my high appreciation of the honour your decision has conferred upon me, and of the great benefit I have experienced in the labour undertaken; the professional knowledge gained by me in this competition has been such as will serve me through life, and this alone, at whatever cost, is worth the struggle.

Mr. W. J. N. Millard said he had much pleasure in proposing a vote of thanks to Mr. Percy Smith for his paper. He was particularly in sympathy with him in his concluding remarks. There was no doubt that a great deal of unnecessary work was done by the competitors for this studentship, especially in regard to the inking-in of drawings, and so on. One competitor did it because another one did it, and not because it was particularly useful. It was the competitors themselves who set the standard, and it was difficult to see how such work was to be avoided unless the Committee laid down the law that there should be no ink drawings—that drawings should be in pencil only. He also agreed with Mr. Smith in his last remark, which contained the kernel of the whole matter. It was not to pay his expenses that a competitor entered this competition; it was for the sake of getting a knowledge that would be useful to him throughout life. Supposing it *did* cost 50*l.* to obtain the studentship; the competition for it was only one means of education. He supposed that money paid for a young architect's education paid expenses out of doors as well as indoors, and he thought it would be a good thing if parents and guardians could be induced to spend on out-door work some of the money which they now appropriated entirely to indoor work; in other words, he thought it would be desirable if architectural pupils spent more time in studying their art from actual buildings, instead of from books or office work. But, curiously enough, it was a minority of architectural students who went that way to work to learn their art. To study architecture from existing buildings, it was not necessary to be able to make pretty sketches. The student could learn much from old buildings, even if he made the roughest working drawings showing all details of construction. He cordially agreed with what Mr. Smith had said as to the usefulness of keeping one's eyes open in travelling through the country; for by so doing there was an infinite amount to be learnt,—not only about architecture, but about other things.

Mr. T. E. Pryce said it afforded him much pleasure to second the vote of thanks, although he did not know that there was much to object to in the comparatively small value of the studentship; at any rate, he did not think that the Association was in a position to increase its pecuniary value very much. He thought that all architectural students' competitions consisted, not merely in the money gained, but in the amount of knowledge gained in competing for them. With regard to Worcester Cathedral, the portions of the work which struck him the most there were the cloisters. Mr. Smith had mentioned that Sir Charles Barry had taken one of the doorways there as his model for the entrance to the House of Lords, and it often struck him (the speaker) that Sir Charles had obtained inspiration for the Victoria Tower of the House of Lords from the central tower of Gloucester Cathedral. With regard to the Commandery at Worcester, he had always understood that it was one of the houses of the Knights of St. John. The old building had been terribly knocked about, but was exceedingly interesting. With regard to the destruction of Campden House, he did not think that that was the only mansion which was destroyed by the Royalists "off their own bat," so to speak. Mr. Smith seemed to have had a very successful trip, and he congratulated him very much upon the collection of drawings which he had brought back.

Mr. W. J. H. Leverton, in supporting the vote of thanks, said he thought it was an important thing to consider in what spirit old work could be studied. He thought there was too much blind admiration for things that were old, because they were old. A great many people seemed to think that all that was old was good and that all that was new was bad, or at any rate unworthy of study; that was, of course, erroneous. He thought that when one proceeded to study a building, whether it was old or new, one should admire it or condemn it for its excellences or defects in proportion, mouldings, details, &c. Above all, it was especially necessary for the student to notice the methods of construction.

Mr. F. T. Baggallay said he had much pleasure in supporting the vote of thanks, especially as he knew something of the part of the country which had been traversed by Mr. Smith. He agreed with what had been said as to the money-value of the studentship. That was not the light in which to regard it. Probably no studentship that was worth winning,—not even those of the Academy and the Institute,—paid from the point of view of pecuniary outlay. He did not quite understand what Mr. Smith meant by speaking of the glass used in the restoration of the Fairford windows as being "stippled."

The Chairman, in putting the motion to the meeting, said he thought Mr. Smith had made a very excellent choice of route. He had been to some very interesting places and seen some exceedingly interesting buildings; but he (the President) should like to see students not running quite so much after what they called "bits," but rather studying whole buildings more than they did. It would in many cases, he was quite sure, be much more instructive to try to grasp one building as a whole, than to run about collecting a little bit of detail from one and a little bit from another. Of course, in a very large building, such as a cathedral, it would not always be possible to do this. Another thing he would say was that students on sketching tours should not make it their primary object to bring back a lot of pretty sketches to show their friends; he quite agreed with what Mr. Millard had said on that head. Excellent as such tours were for gaining a knowledge of one's art, it must not be too hastily assumed that the man who had succeeded in gaining a travelling studentship was thereby rendered a perfect architect. A true architect was always studying and always learning.

The vote of thanks having been carried with much applause,

Mr. Percy D. Smith, in reply, said that as to the glass in the Fairford windows, when looked at from a distance its general tone was that of a curious yellowish brown. Where pieces had been inserted to fill up gaps in the original glass, they had not been elaborately painted in imitation of the old work, but just stippled up here and there so as to indicate the continuation of a limb or other missing part of the picture. As to his choice of route, he chose it because he thought it would be a good one, and because it seemed to contain a pretty good list of places within a tolerably limited circle of area. He had no predilection in favour of that district, and, indeed, had some difficulty in knowing what district to choose; and he thought that the Association might do something for students in the way of indicating to them good districts for their student tours. As to his remarks about the pecuniary aspect of the studentship, he thought his intention had been somewhat mistaken; he himself had no complaint to make in the matter, because he felt that the benefits which he had derived from the studentship were very great, but he knew that there were many members of the Association who did and were obliged to look at the pecuniary side of the question, and that many of them were deterred from competing. Moreover, he thought the standard of work required in the competition for the studentship was too high.

The meeting then terminated.

Advanced Class of Construction and Practice.—At the meeting of this class, held on Wednesday last, Mr. S. B. Beale read a paper on "Fireproof Floors and their Theory of Strength." Mr. Mark Fawcett, an old member of the class, attended, and made some useful remarks.

Birmingham Students of the Institution of Civil Engineers.—At the annual general meeting of the Association of Birmingham Students of the Institution of Civil Engineers, Mr. J. Edward Willcox, A.M.I.C.E., was elected president for the ensuing year, the past president being Mr. Edward Pritchard, M.I.C.E., and the vice-presidents Messrs. W. Till, M.I.C.E., J. W. Gray, M.I.C.E., C. Hunt, M.I.E., and R. Godfrey, A.M.I.C.E., the hon. secretary, Mr. H. K. Woodward, Student, I.C.E.

Land at East Ham.—Messrs. E. E. Croucher & Co. announce in our advertisement columns the sale of the second portion of the East Ham Estate, on Tuesday, April 28, at half past seven in the evening. Messrs. Croucher & Co. held a successful sale of the first portion at the latter end of February, and have, we hear, since sold a large portion of the estate by private treaty.

THE ARCHITECTURAL ASSOCIATION VISITS:

CHURCHES AT KENSINGTON AND HAMMERSMITH.

THE Church of St. John the Baptist, Holland-road, Kensington, which is now being completed from the designs of Mr. James Brooks, was visited on Saturday afternoon last by a large number of members of the Architectural Association. By the special arrangement of the architect, the vaults of the four bays of the nave, which are in progress, were so left as to completely demonstrate the art of vaulting in stone. The western bay showed the diagonal ribs only; the next bay the first courses of the filling in; the adjacent bay the filling carried almost to the crown; and the fourth bay showed the complete vault. Needless to say that this arrangement excited the interest of all, and must have proved of great educational value to many of the younger members whose opportunities of studying vaulting in progress have been few.

The church consists of nave, with side aisles in four bays, all of which are vaulted. The chancel has two bays and semi-circular apsidal termination. The church is entirely built of stone, Bath stone being used in the interior, whilst the exterior is executed in Ancaster stone. A large western tower was originally provided in the design, but this has been abolished, and three deeply-recessed doorways will occupy the western front.

A further visit was made to the Church of the Holy Innocents, Hammersmith, a portion of which has lately been completed from Mr. Brooks's designs. The boundaries of the site upon which this church stands are very irregular, and a special plan has been originated by the architect to meet these requirements by making double transepts and abolishing the side aisles. This arrangement is capitally adapted for its purpose, and is most successfully treated. Mr. Brooks's courtesy in meeting the party and explaining all points of interest made the visits a great success.

THE LONDON COUNTY COUNCIL.

THE usual weekly meeting of this Council was held on Tuesday afternoon last, the Chairman, Sir John Lubbock, presiding.

Tenders.—Tenders for paving, &c., in Rosebery-avenue (the new thoroughfare from Holborn to Islington), and for sewerage-works in Mitcham-lane, Streatham, were opened, and referred to committees for consideration. The lists will be found under our heading "Tenders."

Finance.—In the course of a discussion arising out of one of the recommendations of the Finance Committee, it was announced that the Local Government Board's audit of the Council's accounts for the year 1888-89 was not yet complete! In other words, the Council was now in its third year of existence, and its first year's accounts had not yet been audited! Several members spoke in strong terms of this unsatisfactory state of things, which they condemned as a public scandal, and made the delay the excuse for some sarcasms at the expense of the Local Government Board, who are stated to be responsible for this delay, and who, it seems, are now seeking to obtain "a certain supervision and control over the Council's proceedings in connexion with capital expenditure,"—a proposal which is strongly resented by some members of the Council as an interference with the principle of local self-government.

Selling or Letting Land.—The adjourned report of the Housing of the Working Classes Committee, dated February 16, was as follows:

1. "The Council on January 27 made the following references to your Committee:—

'(*a*) To report upon the advisability of selling land, to be acquired under the Housing of the Working Classes Act, 1890, at reasonable prices, or leasing the same to suitable tenants at low ground-rents, so far as such land may be required for re-housing the working-classes, rather than that the Council itself should undertake building operations.

(*b*) To reconsider and report as to the reasonably restrictive covenants to be imposed in such letting or selling, with regard to construction and elevation of buildings, cubical contents of rooms, rent of tenements, and any other matters of first importance.

(*c*) To consider and report upon the propriety of selling or letting at low figures, with the restrictive covenants, suitable land already in possession of the Council in other parts of London, for the purpose of making provision for an equivalent to the tenants to be displaced by the clearance of any land under the Housing of the Working Classes Act, 1890.'

With regard to (*a*), your Committee understand this reference as raising the question of the advisability of the Council building, where building is required, for rehousing the working classes in preference to letting or selling to others to build. It will be convenient to explain shortly the powers of the Council in this respect under the Housing of the Working Classes Act, 1890.

(i.) Where clearance or reconstruction schemes are effected by the Council, whether under Part I. or Part II. of the Act, the Council may sell or let the area cleared or acquired with a view to the carrying out of the scheme, and in so selling or letting may attach conditions as to maintenance of the state and character of buildings. The Council is also authorised to arrange for any society or individual to carry out the scheme upon any terms the Council think expedient, whether as to rent or otherwise. If the Council should itself wish to build, it can only do so with the express consent of the Secretary of State, and a further consent is required to a retention of buildings when erected beyond 10 years (see sections 12 and 39 (8).

(ii.) The Council is authorised (see section 23 of Act) in connexion with an improvement scheme under Part I., and where further accommodation is required for the persons displaced, to appropriate any other land it may happen to have available for the purpose, or to purchase by agreement other land required. Where this power is exercised, it would appear that, with the consent of the Home Secretary, the Council can, if it so desire, instead of selling or letting for building, apply the powers given by Part III. of the Act and itself erect dwellings (see section 57 (3) and section 59 of the Act).

(iii.) Under Part III. of the Act (section 56 and following sections) the Council has authority to purchase land inside or outside the county, and to build thereon, furnish and let for occupation, houses or cottages for the working classes, and if cottages, gardens not exceeding half an acre may be allotted; if the purchase is by agreement no consent of any superior authority is required, but if compulsory power needs to be exercised, then application must be made to the Secretary of State and Provisional Order obtained.

The Act does not, as your Committee are advised, contemplate that land acquired under Part III. should be let by the Council for others to build, so that if land is thus acquired, buildings erected upon it must be erected by the Council as the local authority.

On the general question raised by this first branch of the reference, your Committee think that, so far as concerns building on areas cleared by scheme, the powers of the Council are practically restricted, save in exceptional cases, to selling or letting for the purpose, the exceptional cases being such as may arise where no reasonable offers to purchase or lease are forthcoming; and that, as regards purchasing land under Part III. of the Act for the purpose of assisting in rehousing persons displaced by clearance schemes, the exercise of powers by the Council in this respect should be governed by the circumstances of each case. In this connexion your Committee recommend—

'That it is not desirable that the Council should adopt any general rule as to building itself, in preference to the letting or selling for building.'

As to the second branch of the reference (*b*), on December 3, 1889, your Committee submitted to the Council regulations framed so as to serve as a guide to the requirements of the Council in regard to construction and cubical contents of rooms of houses designed for the poorer classes. These regulations were approved and adopted by the Council, and your Committee see no occasion at present for suggesting reconsideration of them. The main general principle involved in them was that in no case should the distance between any block of buildings and other buildings be less than the height of buildings erected, and the larger experience since gained by your Committee confirms their opinion as to the desirability of adhering to this principle.

As to the third branch of the reference (*c*) your Committee have had prepared a return of all unlet and unsold property in the possession of the Council now vacant and available for building, a separate column indicating those properties which can be utilised for housing the working classes. Steps are being taken in almost all cases for sale or letting by auction."

The recommendation contained in the foregoing was agreed to, after some discussion.

The Proposed Municipal Lodging House.—On the recommendation of the same Committee, it was resolved, subject to certain conditions, to exercise compulsory powers to acquire certain properties required for the Shelton-street Improvement Scheme, Drury-lane.

The Main Drainage Question.—The discussion on this subject (see p. 291, *ante*) was resumed, and eventually the recommendation of the Committee was agreed to, with Mr. Bassett Hopkins's amendment as an addendum, so that the resolution agreed to is as follows:—

"That detailed plans be prepared of the new sewers on both sides of the river as proposed by Sir Benjamin Baker and the Chief Engineer of the Council in paragraph 10 of their joint report upon the main drainage of London. And that the Committee be instructed to obtain a further report, which shall have special reference (a) to the separation of the rainfall from the sewage in districts where it is desirable; (b) the better prevention of storm overflows into the Thames and Lea; and (c) the better purification of the river."

It was also resolved, on the recommendation of the same Committee,

"That tenders be obtained for the construction of a sludge vessel upon the model of the older and less costly ship, with certain modifications to be described by the Engineer."

After transacting other business, the Council adjourned.

ARCHITECTURAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—At a meeting of this Association, held on Tuesday last, the President, Mr. T. Naden, being in the chair, it was unanimously agreed, on the motion of Mr. W. Henman, A.R.I.B.A., seconded by Mr. T. Naden, "That, whilst it is the opinion of this Association that it is usually desirable that the designing of important public buildings should be open to architectural competition, it is nevertheless advisable that, if any buildings are to be erected between the Victoria Courts and Newton-street, which may properly be considered as forming an integral part of the new Law Courts, they should certainly be regarded as a completion of Messrs. Webb & Bell's design, and should be placed in their hands, and not be the subject of a competition." The motion was supported by Mr. M. Hawley Lloyd (Vice-President), Messrs. W. Doubleday, A. Harrison, Herbert R. Lloyd, and others, and the hon. secretary was instructed to forward copies of the resolution to the Mayor and chairmen of the several committees interested. Other business having been debated, the meeting closed.

NORTHERN ARCHITECTURAL ASSOCIATION.—The annual meeting of the Northern Architectural Association was held on the 9th inst., in the Council-room of the College of Science, Newcastle, under the presidency of Mr. W. S. Hicks. The Secretary read the report of the thirty-second session, which stated that the number of members continued to increase, the total membership being 29 members, 22 associates, and 20 students, not including those elected at that meeting. The out-door meetings in the summer had been continued, and had been very successful. Negotiations were in progress for securing a permanent home for the Association. The committee deplored the action of the Institute in opposing the progress of the Registration Bill. On the motion of Mr. Glover, the report was adopted. The President announced that the business of the thirty-second session was now closed. He must say that it had been most successful in every way, in fact they had never had so successful a year. On the motion of Mr. W. H. Knowles, a vote of thanks was passed to the President and the Secretary (Mr. F. W. Rich).

EDINBURGH ARCHITECTURAL ASSOCIATION.—At the ordinary meeting of this Association, held on the 9th inst., a paper was read by Mr. A. H. Millar, Dundee, on "Curiosities of Architecture in Dundee." In giving a sketch of Dundee in stone and lime, Mr. Millar exhibited views of the Old Steeple, with ground plan and section; Lady Wark stairs, the Wishart Arch, Dudhope Castle, the Old Custom-House in the Green Market, known as Drummond Castle; interiors of some of the chambers in the Franciscan Nunnery, and several of the old sculptured stones taken from the Vault and from Whitehall Close. These buildings ranged in date from the fifteenth till the close of the seventeenth century. Passing to the examination of more modern buildings, Mr. Millar alluded to the change introduced by Mr. William Adam by his design for the Town House, erected in 1734, and showed that many buildings of last century,—St. Andrew's Church, the Trades Hall, the Episcopal Chapel, afterwards known as Union Hall, and Trinity House,—had been suggested by it. The next branch of the subject led him to the consideration of the street architecture of the olden time, and in a series of views chronologically arranged he showed the development of the modern streets from the wynds and closes of former times. The inner architecture of the closes,—the courts and back tenements,—were next illustrated by a number of views and descriptions of public buildings erected in Dundee during the last fifty years, which showed the great variety in styles of architecture now visible in the city.

On the motion of Mr. W. W. Robertson, of H.M. Board of Works, seconded by Mr. Ross, a cordial vote of thanks was awarded to Mr. Millar for his paper.

GLASGOW ARCHITECTURAL ASSOCIATION.—The usual monthly meeting of this Association was held on the 7th inst., the Vice-President, Mr. Henry D. Walton, occupying the chair. A paper on Michael Angelo was read by Mr. Robert Wemyss. An account of the artist's life and work was given, illustrated with photographs and prints. Greatest as a sculptor, still the author said his architectural works are not far behind the best work of his time. If in his greatest work—St. Peter's, taken up when an old man of 72—he showed somewhat scant respect to the intentions of its earlier architects, his design in turn was freely handled by his successor, and the dome, grand though it be, is not what Michael Angelo's model shows to have been his intention. At the close of the paper a criticism was given by Mr. William G. Anderson, after which a vote of thanks was passed to Mr. Wemyss.

LIVERPOOL ENGINEERING SOCIETY.

THE tenth ordinary meeting of the present session was held at the Royal Institution, Colquitt-street, on Wednesday evening, 8th inst., Mr. Ferdinand Hudleston, Assoc.M.Inst. C.E., President, in the chair.

A paper was read by Mr. Alexander Ross, M.Inst.C.E., entitled "Railway Signalling and Interlocking,"

The paper, which was of a highly technical character, opened with a short sketch of the progress made in signalling as a rapid means of conveying intelligence between distant points, since the adoption of the first-known semaphore signal, which was used by the French in 1794. The author then proceeded to describe in great detail the working of the various systems of railway signalling used from the earliest times up to the present day. The paper was illustrated by a large number of diagrams, together with models, which were greatly appreciated by the members, who accorded Mr. Ross a unanimous vote of thanks upon the termination of his valuable paper.

Correspondence.

To the Editor of THE BUILDER.

ENGLISH ARCHITECTS IN AUSTRALIA.

SIR,—In your issue of January 17, just to hand, a paragraph appears under the head of "Notes" referring to the local Institute of Architects and its President.

I do not propose to enter into this question, to which, as you admit, there is decidedly another side, but I must take exception to the clause referring to the room for improvement in the standard of professional practice. "This is not unlikely to be the case in a new country, and one, moreover, which is still to a certain extent regarded by those who have been failures in the Old World, either from defect of intellectual or moral fibre, as a place where they may try over again."

Against this aspersion I must protest most strongly, both for myself and for the great majority of my fellow-countrymen, whom I know to be honourable men, desirous above all things to maintain the English standard of professional practice, which is undoubtedly far higher than that which has hitherto been prevalent in this colony.

Moreover, I am not aware of a single English architect practising in Sydney who has been a failure in the Old World from any cause whatever.

A few of us practised in Great Britain, others came out as young men in the hope that their English professional training would produce better results here than in the overcrowded arena at home.

Some of us have been successful, and, unfortunately, in a small community success has to pay the usual penalty of jealousy and misrepresentation.

I quite admit that the standard of the profession requires raising in this colony, but if you will make fuller inquiries you will find that it is those of English birth who are the foremost in their endeavours to effect this most desirable object. AN ENGLISHMAN.

Sydney, Feb. 25, 1891.

THE LATE MR. J. D. SEDDING.

SIR,—I am sure those who knew the late John D. Sedding and his works will echo and much appreciate your remarks in last week's *Builder*.

Sedding was, indeed, a true "artist architect," and yet with all his ability he was so modest, so unassuming, and devoid of self-conceit. His death is, indeed, a serious loss to architecture, and a serious loss personally to those who knew and loved him.

May I venture to suggest that you issue a few double plates containing a selection of some of the best works of Sedding? The illustrations might be grouped so as to get three or four on a double plate, or in such other way as you approve. A few of his works have been already illustrated in your excellent journal; but if reproduced in this new form I think they will be much appreciated by your readers.

April 14, 1891. JAMES NEALE.

The Student's Column.

VENTILATION AND WARMING.—XV.

PREPARATION OF THE FRESH AIR.

IN order that the fresh air introduced by ventilation may be as fresh as possible, it is usually desirable to adopt some means of obtaining a higher standard of purity than exists in the normal conditions of the external atmosphere, particularly in large and smoky towns.

Fog is one of the manifestations of a smoky town atmosphere, which is particularly offensive, and of which it is eminently desirable, if possible, to be freed in our internal atmosphere.

When we remember what fog is, namely, the combination of smoke and solid impurities, with an atmosphere saturated with moisture, we readily understand that fog, as fog, may be prevented from manifesting itself inside a building by simply heating the fog-laden air on entry. The peculiar vesiculated condition of the suspended moisture in the atmosphere, which enables it to support the solid impurities of the fog, is removed by raising its temperature, and so more completely volatilising the water vapour, which then possesses too little coherence to carry any longer the smoke and grime. When, therefore, fog-laden air is brought in over a heated surface, a large part of the solid matter is deposited, and the atmosphere to that extent purified.

This extent of purification, however, falls short of perfection by a long way, and if we wish to have our fresh air as pure as possible we must adopt other and more effectual methods of cleansing.

Washing the incoming air by means of a water spray has been frequently utilised for the cleansing of an air-supply, and is an effectual process for removing much of the impurity. It, however, adds to the degree of moisture in the air, and this requires careful supervision and watching to ensure that the resultant hygrometrical state is neither unpleasant nor injurious. In hot weather, especially, the degree of moisture should have constant attention. If the air be warm, and also heavily charged with moisture, a sensation of languor and lassitude is induced, while, on the other hand, when an insufficient quantity of water is present, a sensation of dryness in the throat, and bronchial irritation is experienced. We have discussed in chapter iii. the extent of humidity desirable for English practice, and we should endeavour to keep within the limits of 70 to 80 per cent., which we found to be most suitable.

In the use of the water spray it is important to direct it in as finely divided a condition as possible, and to allow a good extent of fall. It is advantageous also to duplicate it, so to speak, so that the air passes through a double sheet of water with an intervening space between the two streams.

A further advantage of the water spray is that by its use the temperature of the incoming air may be considerably reduced, no mean advantage in hot weather.

Ice has, of course, been repeatedly employed to reduce the temperature of fresh air, and many expedients have been tried for its effective use. It has been placed simply as a block in the delivery ducts, or arranged in smaller pieces on a grid or frame set in an inclined position in the duct, or on shelves similarly arranged. But probably the most effective method of using ice is to reduce the temperature of the water spray by means of it, and with the cooled water to cool the air. It has been found that, by the use of a water spray, the temperature of the fresh air may be lowered by half the difference in temperature existing between the external atmosphere and the water spray.

Fresh air cooled over the surface of ice has been found to produce a sensation of especial freshness, even when the reduction in temperature measured by degrees of the thermometer is extremely small. This is, in all probability, owing to alteration in the humidity of the air, caused by the contact with the glacial surface.

Incoming fresh air has been sometimes partially cleansed of its grosser impurities by causing it to impinge upon the surface of a still sheet of water. This is the method adopted in many of the forms of wall-inlet boxes supplied by ventilating tradesmen for domestic use. When this description of cleansing apparatus is adopted far greater efficiency may be obtained by the substitution of a film of glycerine for the sheet of water. The glycerine is both a more powerful retainer of impurity and is more free from the probability of failure by evaporation. Such means of cleansing are, however, only suitable for small inlets, not for any important scheme of ventilation.

Where forced draught is employed, filter screens of various textile fabrics have been utilised to remove impurities from fresh air. These should naturally be of somewhat open texture, so as not to unduly retard the current of air. A certain amount of obstruction, due to the friction against their fibres, they must necessarily cause, but Professor Carnelley in the report already alluded to, quoted an instance, at the University College, Dundee, where the volume of air passing is actually 10 per cent. greater when the filter screens are in position than when the inlet opening is quite free. The explanation of this somewhat paradoxical fact is found in further experiments at the same place by Dr. Carnelley, which showed that when the filter screens are in position the current at various points in the section of the inlet opening is far more uniform than when the screens are removed. This showed that the irregular eddying current obstructed the flow of the entering air current more than the screen. The construction of the filter screens, here referred to, is worth noting. They are of coarse jute cloth, of the quality known as Light Hessian, which weighs 6½ oz. per yard of 40 inches wide, costs 2d. per yard, contains 67 meshes to the square inch, and is composed of threads whose diameter is one-fourth that of the mesh. It should be noted, as a further explanation of the apparent paradox mentioned above, that the inlet openings are of large size, and of oblong rectangular shape.

Conical-shaped bags suspended in the inlet shafts have been sometimes adopted with the idea of increasing the surface in proportion to the sectional area of the duct. What is known as cheese cloth or some similar textile is found to be a suitable fabric for the construction of these bag filters.

The most effective medium of all for filtering air is probably cotton wool of about 6 in. thickness, but this is expensive both in the first cost of the wool, in the necessity for frequent renewal, and in the additional power required to force the air through the very considerable amount of obstruction it presents.

In connexion with the purity and freshness of the air-supply there is a point which was emphasised by Dr. Reid in his memoranda or instructions for the management of the ventilating apparatus arranged by him for St. George's Hall, Liverpool, that is worth remembering. He says:—"Let no painting be permitted, except at proper periods, and none be used for warm apparatus, except the hard copal varnish, laid on in the most sparing manner in which it can be applied and retained. More trouble, annoyance, and dissatisfaction with the condition of ventilating works may often be traced to this cause than to any other; excessive painting takes away the freshness and elasticity of the air in an extreme degree, and too frequently gives it the character of being cooked or baked. No practice is so common in some public buildings as painting them immediately before the commencement of a season of occupation, to an extent that they do not get over till it is terminated."

One other matter there remains in connexion with fresh air supply, the regulation of its tem-

perature. This is, of course, a large question, but there is a clearly-marked key-note which should always be borne in mind. In any adequate scheme of ventilation, the whole of the air-supply should be admitted to the apartment or chamber ventilated at the temperature required. No attempt should be made to warm the apartment by the admission of air at a high temperature so as to mingle with the cooler internal atmosphere. To bring the fresh air to the right temperature, it is advisable to construct an equalizing or mixing chamber below the floor of the apartment. In this mixing chamber the warmed air from the heating apparatus can be tempered to the requisite degree by the admixture of the necessary amount of cold, fresh air, and the temperature can in this way be regulated to a nicety. The adoption of such an equalizing or mixing chamber also greatly assists the equable distribution of the fresh air, and thus prevents draught.

OBITUARY.

MR. KEELEY HALSWELLE.—We regret to announce the somewhat sudden death in Paris of Mr. Keeley Halswelle, R.I., A.R.S.A., on Saturday. He was within a fortnight of completing his 59th year.

GENERAL BUILDING NEWS.

NEW PARISH CHURCH AT EPPING.—The new parish church of St. John the Baptist, Epping, was consecrated on the 8th inst. According to the *Essex Chronicle*, the old parish church of All Saints', at Epping Upland, is fully three miles from the town, and the chapel-of-ease of St. John the Baptist was inadequate to requirements. In addition to this, there was a strong feeling that the parish church should be in the centre of the population. In 1888 an Act of Parliament was obtained under which the new church is made the parish church, and All Saints' will be a chapel-of-ease. The work of building the new church was commenced in 1889, and the memorial-stone was laid by Miss Elizabeth Horsley Whiteman, on November 6 in that year. The new church is constructed externally of wrought stone, and there is a good deal of wrought stone internally. The style of architecture is Gothic of the fourteenth century. The church is covered in with a wagon roof with moulded panels. The plan consists of a nave of five bays, terminated by a lofty carved oak screen, a chancel of two bays, and a sanctuary of one bay. When completed the church will have two aisles, but only the south aisle has been built at present. There is a side chapel at the south side of the chancel, and the vestry and sacristy adjoin the chapel. The chief feature of the interior is the lofty arcade on the south side. The piers and arches are boldly moulded. There is no chancel arch, but one continuous width for the nave and chancel. Oak screens, however, mark the distinctive parts of the fabric. The chancel screen is surmounted by a carved oak cross. The large east window is of seven lights. The subject of the central light is "The Crucifixion," and the subjects of the central lights of the side groups are "The Risen Christ" and "The Blessed Virgin with our Lord." This window has been given by Mr. E. J. Wythes, in memory of his father and mother. The window in the side chapel is given by the Vicar, in memory of a brother, the subjects being St. Stephen, St. Christopher, and St. Dunstan. Both windows are by Messrs. Burlison & Grylls. The font and lectern are the gifts of Miss Whiteman and friends. The roof of the nave and chancel are decorated in colours, and there is a good deal of gilding and illuminated lettering in the chancel roof. The painting was executed by Mr. Powell, of Lincoln, under the direction of the architects. The church is seated with chairs, and will accommodate some 700 worshippers. The tower (the erection of which, as well as that of the north aisle, is deferred) will rise on the south side of the church, and will be connected with it by a cloister-like passage. The contractors were Messrs. Rudd & Son, of Grantham, and the architects are Messrs. Bodley & Garner, of Gray's-inn-square. The expenditure already incurred is upwards of 10,000*l.*, of which sum Miss Whiteman gave 3,000*l.*, Mr. E. J. Wythes, of Copt Hall, Lord of the Manor, 4,000*l.*, and the Vicar (the Rev. E. Buckmaster), 1,500*l.*

CHRIST CHURCH, SOUTHWARK.—This church has been enlarged by the addition of a chancel thirty-five feet in length, with an organ chamber on the north side, and clergy and choir vestries on the south. By this addition, the space in the nave, formerly occupied by the organ and the quasi-chancel, has been made available for sittings. The old church is of simple, but not mean, character, in the style that was used for ecclesiastical purposes at the time of its erection, early in the Georgian era. The walls are of brick, with stone cornices and quoins and dressings to the windows and doorways. The building, although interesting, as marking the taste of the period of its erection, seemed to be hardly suitable for giving the keynote for the style of the additions. The architect therefore adopted for the new work the round-arched style of Central Italy, as being sufficiently in keeping with the Classic work of the original structure. The new walls are of brick, with stone dressings. Internally, the brickwork is plastered, and red and white stones are used for the dressings, some of the shafts being of red marble. The chancel ceiling is divided by ribs into panels, which it is hoped may at some time be decorated. The upper part of the eastern wall is intended to receive a painting of "Our Lord in Majesty." The five memorial windows removed from the former apse have been refixed in the new chancel. The altar is raised eight steps above the nave. The steps are of white marble, and the paving is of marble and tiles. There are structural sedilia, credence, and piscina in the south wall. On the north side of the chancel, a double arch opens into the organ chamber, which has also an arch into the north aisle. The jambs of the chancel arch have, on the western side, panelled and sculptured medallions. On the north side are busts of the Latin Fathers, and on the south side those of St. George, St. Alban, St. Augustine of England, and St. Edward the Confessor. On the jambs of the organ chamber arch are carved the arms of the Marshall trustees, the patrons of the living, and the arms of Bishop Thorold. Over the doorway leading from the south aisle into the vestry, is carved "*Christus Redemptor mundi Deus.*" The body of the church, originally in one span, has had stone arcades introduced, forming nave and aisles. The columns are of red stone on pedestals, and the arches are of red and white stone. The side portions of the galleries have been removed, leaving the western gallery across the whole width of the church. The inside of the old windows in the aisles are at present of their original plain character, but it is intended, when circumstances permit, to add stone dressings to them without altering their external appearance. The whole of the old portion of the church, including the tower and spire, has been thoroughly repaired. The cost of carrying out the additions has been very large owing to the necessity of carrying the foundations down through a bed of peat to the solid gravel, at a depth of twenty feet below the surface. The angles of the old building have had to be underpinned to the same depth. The works have been carried out by Mr. G. Dobson, of Colchester, from the designs of Mr. Chas. R. Baker King, A.R.I.B.A. The carving was executed by Messrs. Farmer and Brindley. Messrs. Luscombe, of Exeter, made the litany desk from the architect's designs. The cost of the work has been about 6,300*l.* The church is to be opened this day (Saturday), by a special service at 3 p.m.

EXTENSION OF NORTH STAINLEY CHURCH.—On the 25th ult., Miss Staveley, of Old Sleningford Hall, near Ripon, laid the foundation-stone of a new chancel to the Church of St. Mary the Virgin, at North Stainley, near Ripon. The present church is a parallelogram, 36 ft. by 24 ft. The additions will consist of a chancel, 24 ft. by 18 ft., the present church becoming the nave, a vestry with organ-chamber on the north side, and a porch on the south side. The style adopted is second pointed or Decorated of the fourteenth century. The new work will be built of stone from Miss Staveley's quarry, with dressings inside and out of Rainton stone. The present church will be re-seated as the future nave, the plaster ceiling removed, and the timbers boarded and formed into panels with pitch-pine. A warming apparatus will also be provided. The chancel will be furnished with oak stalls for clergy and choir, tile pavement on floor, and the roof of pitch-pine in panels. The total cost of the work will be about 1,000*l.* The builders are Messrs. Kay & Son, of Rainton, and Mr. John Metcalfe, of North Stainley. Mr. R. J. Withers, of London, is the architect.

NEW DRILL HALL, GRIMSBY.—On the 1st inst. the Right Hon. Edward Stanhope, M.P., Secretary of State for War, formally opened new head-quarters and a drill-hill, which have been erected at Grimsby for the 1st Lincolnshire Artillery Volunteers. The land and buildings, which represent altogether an expenditure of about 6,000*l.*, have been presented to the corps by the directors and shareholders of the Manchester, Sheffield, and Lincolnshire Railway Company. The buildings, which occupy a site in Victoria-street, form a two-story block, and contain an armoury, orderly-room, band-room, officers', sergeants', and gunners' rooms, &c. Behind the offices is the drill-hall, which is 96 ft. long by 52 ft. 6 in. wide. It has an open roof of iron construction, and the flooring, which is on a concrete foundation, is of solid wood blocks, laid in herring-bone pattern. Facing Victoria-street there is a square, central battlemented tower, rising to a height of 43 ft., with a circular angle turret. The works have been carried out by Mr. J. Wilkinson, Cleethorpes, from plans and under the superintendence of Mr. E. W. Farebrother, architect, Grimsby.

NEW CEMETERY, WILTON.—The dedication of a new cemetery at Wilton, near Salisbury, took place on the 19th ult. The site for the cemetery comprises about two acres, and abuts upon the high road leading from Wilton to Ugford. It is enclosed on the east and south sides by dwarf walls and iron railings about 8 ft. high, whilst the north and west sides are enclosed with hedges with roadways beyond. The entrance is on the north side in the centre of the site under covered entrance gateway, with caretaker's lodge on the right-hand side, and waiting-room on the left, the whole forming one building, and being designed in Late Tudor style and built of red bricks and Bath stone dressings. The windows and doorways are of moulded stone. The buttresses are of red brick with stone weatherings. The roofs are covered with Broseley tiles. The carving was executed by Mr. Harry Hems, of Exeter. The contract for the works was taken by Mr. Gilbert Harris, of Salisbury. The laying out and the whole of the work has been carried out from the designs and under the personal supervision of Mr. Fred Bath, architect, of Salisbury.

RE-OPENING OF STON EASTON CHURCH.—Ston Easton parish church, which is dedicated to St. Mary, has been closed for the past twelve months, during which it has undergone restoration, from the designs and under the superintendence of Sir Arthur Blomfield, A.R.A., the builder being Mr. John Thompson, of Peterborough. The original church dates from the Norman period. The nave arcade is, however, of the fourteenth century. The windows throughout are of the Perpendicular style. The entire church has been re-seated with oak seats. The choir-stalls and altar-rail are of oak, and a carved oak pulpit is placed in the building. A carved oak screen has been placed between the south aisle and the vestry. The floors of the nave and aisles are laid with wood block flooring, and the church is supplied with Messrs. Haden & Sons' heating apparatus. Several stained memorial windows have been placed in the church, as well as a new font, with a carved oak canopy. The work has been carried out at a cost of 3,000*l.*

NEW POLICE STATION, DONCASTER.—The new police station for the Lower Strafforth and Tickhill Division of the West Riding was opened recently. The premises include court-house, police offices, superintendent's house, groom's house, stabling, &c., and are situate on Station-road. The main building, comprising the court, the police offices, and the superintendent's house, is built with Conisborough faced bricks, with dressings of terra-cotta from Ruabon, in Wales. The coping of the boundary walls is of Dumfries stone, and all the window sills are terra cotta. Admission to the building from the front is gained by four entrances. The police offices are on the ground-floor, in front of the building, and include the superintendent's office, the charge room, and the constables' room. Dividing these offices from the cells, which occupy the back part of the building on the ground-floor, is what is termed the cell area, 54 ft. by 18 ft., the floor of which is a granolithic pavement. The cells are six in number. Over the cells and cell area is the court room. The public ascend to the second story by means of a stone staircase. The staircase leads into a public waiting-room with marble mosaic floor. The floor of the court room is of pitch-pine wood-blocks. Accommodation is provided for about 200 persons. The room is lighted by seven windows, with stained-glass panels at the top. The court room and all the adjoining offices are warmed by hot-water apparatus, by Haden & Son, of Manchester. The plans were supplied by Mr. J. Vickers Edwards, the West Riding Surveyor. The contractor for the masonry, bricklaying, &c., was Mr. B. Wortley, Doncaster.

ST. LEONARD'S CHURCH, GRIMSBURY.—St. Leonard's Church, Grimsbury, near Banbury, the foundation-stone of which was laid last July by the Bishop of Oxford, was opened on the 7th inst. The new building has been erected from the plans of Mr. W. E. Mills, A.R.I.B.A., Banbury. The style is thirteenth century Gothic. The church consists of chancel, nave, two aisles, with organ chamber and choir vestry, narthex at the west end with two doors, and entrance porch at the south side. The dressings of the building are Bath stone, and the roof is covered with Brownhill tiles. The nave and aisles are laid with wood blocks and the chancel with eucaustic tiles. The chancel is raised two steps above the nave, and contains sedilia and piscina. Mr. W. G. Manwaring has presented an oak pulpit. The windows are filled with cathedral glass. The roof is open, of unstained deal, and there is a bell tower on the exterior of the roof immediately over the chancel arch. The building is heated by a Parrott's stove. The church will accommodate 350 people. The builder was Mr. J. S. Kimberley, of Banbury, and his contract was £2,600.

FOREIGN AND COLONIAL.

FRANCE.—A committee has been formed at Valmy to erect a monument in memory of the great battle there in 1792.——M. Mercié has been commissioned to execute the national Joan of Arc memorial for Domrémy.——A committee has been formed at Rouen to erect a monument to the late M. Pouyer-Quertier.——A rope railway has just been opened at Lyons to connect the Croix Rouge with the Place Croix-Paquet.——M. Louis Gonse has been appointed a member of the Commission des Monuments Historiques, in place of the late M. Laisné.——M. Jules Comte, M. Duplessis (curator of engravings in the Bibliothèque National), M. Georges Lafénestre, and M. Keraniou, have presented themselves as

candidates for the place in the Académie des Beaux-Arts left vacant by the death of M. Lenoir.——M. Carolus Duran has been named president of the jury of the Champ de Mars Salon, M. Dagnan-Bouveret Vice-president.——Out of 2,070 pictures sent to the Champ de Mars Salon by outsiders 243 have been accepted, and 168 drawings and pastels out of 952. The examination of the works of Associates will commence on the 18th (to-day).——The Jury of Architecture at the old Salon is composed of MM. Vaudremer, Ch. Garnier, Coquart, Daumet, Pascal, Guadet, Ginain, Normand, Raulin, Mayeux, Loviot, Laloux, and Deslignières.——An exhibition of the works of Edmond Yon, the landscape painter, has been opened at the Galérie Georges Petit.——The Jury of the Ecole des Beaux-Arts have just decided on the sketches for the first trial for the sculpture competition; subject, "Briseis weeping over the body of Patroclus." Twenty students have been admitted to take up the second competition, the subject being "The Ghost of Cæsar appearing to Brutus."——The death is announced of M. Mültzer Isabelle, Government architect, at Paris, at the age of 57. He was a pupil of Isabelle, Blouet, and Gilbert, and was entrusted successively with the reconstruction of the Palais de Justice at Angers, the baths at Bourbonne-les-Bains, and was lately architect-in-chief to the Ecole des Arts et Métiers and to the bathing establishments under State control.——The death is also announced of M. Francois Gilbert, sculptor, formerly President of the "Chambre Syndicate des Sculpteurs." He was a pupil of Cortot, obtained the Cross of the Legion of Honour in 1856, and executed works of some importance, especially the decoration of the Salle de la Bourse at Marseilles, and of the Salle des Pas Perdus of the Palais de Justice in the same city. ——A picture by Alexandre Hesse has been placed in the Chamber of Deputies, representing "Mirabeau at the Sitting of June 23, 1789," which was lent to the Museum at Amiens some years ago by the Government.——M. Legendre, architect, of Nantes, has been appointed non-resident member of the Société Centrale des Architectes, in place of M. Durand, of Bordeaux, recently deceased.—— The Association of "Architectes Diplomés par le Gouvernement" have addressed to the Municipal Council of Paris a request that their exhibits at the *Salon* may be considered eligible for purchase by the Municipality, as well as the works of painters and sculptors.——At the Ecole des Beaux-Arts the students' works executed in the simultaneous course of instruction in the three arts have been under inspection; M. Quarez (pupil of M. Guadet) and M. Auberville (pupil of M. Pascal) have been admitted into the first class.

PROGRESS OF BENARES WATERWORKS.—In the report of Mr. Wilson, the Resident Engineer, for December, it is stated that the earthwork in the embankment and excavation of settling-tanks has been nearly completed. The water in Nuneriah-pokhra having been exhausted, the steam pump has been removed to Sankhudharra tank. The laying of the pipes of the rising-main from the Ganges has now been commenced, and when these have been laid an ample supply of water for the works at the distributing station will be obtained. The concreting and brickwork of the tanks are now in hand, and arrangements have been made by Messrs. Walsh, Lovett, & Co. with the Bengal Stone Company at Chunar for stone ballast for the concreting, as superior to brick ballast. In filter No. 1 about 20 per cent. of excavation has been done; in filter No. 2 concreting under main walls and central drain completed; in Nos. 3 and 4 about 90 per cent. excavation finished; in No. 5 concreting under main walls and drain completed and about 2 ft. of brickwork in main walls and central drain built; in No. 6 concreting under main walls and drains completed and brickworks on three sides of main walls in progress; No. 7 concreting under main walls completed and about 3 ft. of brick ventilators being fixed. In the reservoir some 600,000 cubic feet have been excavated to an average depth of 10 ft. Pipes of different diameters are arriving in large quantities daily and have been delivered at the distributing-station and along the rising main.—*Indian Engineer.*

MISCELLANEOUS.

EXAMINATIONS, SURVEYORS' INSTITUTION.—Too late for this week, as they came to hand just as we were going to press, we have received the lists of candidates who have passed the recent examinations for the Professional Associateship of this Institution. We will print the lists next week.

"CHARACTERS AND COSTUMES OF OLD EDINBURGH."—Some months ago the Corporation of Edinburgh acquired by purchase a number of water-colour sketches representing municipal officials and Court officials connected with Holyrood and the various Corporations in the city about fifty years ago. The collection embraces portraits of Town Councillors, Bailies, and Provost, the Deacons, and various Corporations of Easter and Wester Portsburgh, Calton, and Canongate; costumes of the various officers connected with these Corporations, of street characters and hawkers, and of the various trades in the city half a century ago. There are also banners and insignia of the trades, batons, seals, and armorial bearings. All these sketches were in single sheets, and they have now been mounted and bound in coloured morocco and gold by Messrs. Macniven & Cameron. There are other two volumes bound in red morocco which contain letters of an early date from the various Lord Provosts and other distinguished Scotsmen. As years roll on the collection of portraits will increase in value, as most of the originals have either been lost or destroyed. The volumes, which measure 22 in. by 16 in., will be exhibited for the first time at the conversazione which is to be held on Monday to commemorate the opening of the extended and improved City Chambers.—*Scotsman.*

NATIONAL REGISTRATION OF PLUMBERS.—The third annual meeting of the registered plumbers in the Edinburgh and East of Scotland District was held in the Lecture Hall of the Philosophical Institution, Edinburgh, on 13th inst. Professor Armstrong presided, and in moving the adoption of the report he said that, considering the important and peculiar nature of the work plumbers had to perform in relation to the health of the individual and of the community, it was desirable alike in the interests of the public and of the craft that none but efficient and trustworthy workmen should be employed to perform the work. An incompetent and inexperienced workman might be described as a "pestilence that walketh in darkness," and it was to remedy this that the movement had arisen. A good deal had been said about the education of plumbers, and his experience taught him that what they most needed was a competent acquaintance with the scientific principles upon which the craft was based, and to which it must owe its progress and advancement. Mr. Ainslie seconded the adoption of the report, which was carried unanimously. Sir Douglas Maclagan was re-elected President, Mr. Robert Little Vice-President, and members of Council and other office-bearers were also appointed. The clerk to the Worshipful Company of Plumbers gave an outline of the progress of the movement throughout the kingdom, and a motion was adopted declaring that, in the opinion of the meeting, the national registration of plumbers was essential in the interests of public health. —— Meetings of District Councils were also held at Aberdeen and Sheffield last week. ——On Monday night, at the People's Palace, Mile-end-road, prizes were distributed by the Plumbers' Company to the students of the People's Palace Technical Schools Plumbing Classes. Mr. Taylor (instructor in plumbing) delivered a brief address, in the course of which he gave a gratifying account of the progress of the classes. There were now no fewer than fifty members, and he hoped that next session they would have a yet larger attendance than they had had heretofore. The Master of the Plumbers' Company (Mr. Bishop) next distributed the prizes, consisting of books on the art of plumbing.

ROMAN LINCOLN.—A most interesting discovery has been made by Mr. Teague, the Corporation Waterworks Engineer, in laying the new main in Bailgate. On turning from Westgate into Bailgate, the bases of three more Roman columns were found exactly corresponding in detail of moulding with those under Mr. Allis' and Mr. Blaze's properties. Mr. Thropp, assisted by Mr. Allis, has taken dimensions fixing the positions of the three columns relatively with those so carefully preserved by Mr. Allis and Mr. Blaze, the total distance from the centre of the extreme north column to the most southern one, now to be seen, is 150 ft. 4 in., the distance from centre to centre of each column varies from 14 ft. to 15 ft. The extreme north one, under Mr. Allis' house, is a double column, and so is the last one under the corner of Mr. Blaze's house. The depth from the surface of the road to the shaft of the column immediately above the base is 5 ft. 10 in., and from the surface of the road to the bottom of the large square plinth stone is 8 ft. 9½ in. The plinth stone has been cut away on the west side to allow the main to be laid. It is evident that the building had been far more extensive than was originally supposed, and even the exact direction of the Roman street running east and west through the city may not accord now with previous supposition. The positions of the new columns, as drawn on the large ordnance map, show an exact continuation of the face line of this large building, of which they formed part. The rubble wall, built from column to column, still goes southwards from the last column found. It is expected that further discovery will follow.

ROYAL METEOROLOGICAL SOCIETY.—The usual monthly meeting of this society was held on Wednesday evening last, at the Institution of Civil Engineers, Great George-street, Westminster, Mr. A. Brewin, Vice-President, in the chair. The first paper read was "On some remarkable features in the Winter of 1890-91," by Mr. F. J. Brodie, F.R. Met. Soc. The author pointed out the peculiarities or special features of interest in the weather which prevailed over the British Isles during the past winter. In addition to the prolonged frost which lasted from the close of November to about January 22, he finds that the barometric pressure for the whole winter was about a quarter of an inch above the average; and that when the wind was not absolutely calm, there was an undue prevalence of breezes from some cold quarter. The percentage of winds from the southward did not amount to one half of the average. The number of foggy days in London was no less than twice the average. The rainfall over the greater part of the British Isles was less than half the average. The author says that almost every element in the weather has been influenced to an abnormal degree by the remarkable prevalence of high barometrical pressure, and if we were called upon to define the season 1890-91, we should have little hesitation in giving it the name of the "anti-cyclonic winter." The second paper was on "The Rainfall of February, 1891," by Mr. H. S. Wallis, F.R. Met. Soc. This was one of the driest months upon record; the mean rainfall over England, excluding the Lake District, being only 0·066 in., or about one-fortieth of the average.

RECENT PATENTS:

ABSTRACTS OF SPECIFICATIONS.

3,883.—OPEN FIRE-PLACES: *C. Whitfield.*—The object of this invention is to obtain the heating effect of a closed stove, and promote the ventilation of the room. A canopy is fitted at the top of the stove, enclosing the opening leading to the chimney, and a tube is fixed through the canopy to the flue. The fire, while it can be seen from the front, is partially enclosed, and the heating effect of the top plate makes the open fire give nearly the effect of a closed stove.

4,118.—FIREPLACES: *J. Shaw.*—According to this invention, a plate is placed loosely in the chimney, the base resting on the fireplace level with the top bars, the pins resting against the front of the chimney or fireplace to narrow the draught of the chimney to the space measured by the length of the pin and the width of the opening. This arrangement secures a uniform draught, complete combustion of fuel, and prevention of smoke and down-draught. The heat is reflected from the metal plate into the room instead of passing up the chimney.

1,619.—DOOR-FASTENER: *J. W. Dart.*—The catch of the fastener, which is the subject of this patent, is fixed on the lintel of the door-frame, and to the catch is affixed a small line connected to the ceiling by means of two pulleys. This line drops at the stile of the door-frame, being out of the way, but at a convenient height to be reached by a child. When the catch is pulled, the bolt on door is allowed pass and the door to open.

6,892.—FITTING AIR-TIGHT CASES, WINDOWS, &c.: *J. G. Stidder.*—On the sill of a sliding window or door the patentee places a metallic channel of U section and a smaller channel with drainage-pipes. A bar of T section is at the lower edge of the bottom rail, the upper part projecting beyond the outer wall of the first channel, the vertical limb of the bar impinging against the outer edge. Vulcanised rubber strips are also fitted to make air, water, and dust-tight joints.

12,765.—FLOORING BLOCKS: *E. Gregory.*—According to this patent the blocks of wood or of other material overlap at their edges, and each block is held down by four adjacent blocks, and also holds down the four adjacent blocks.

19,063.—CEILINGS AND WALLS: *T. H. Recknell.*—According to the specification the ceiling or wall is first prepared with a wood surface, then pieces of glass or china of various patterns and colours are fixed to the wood surface with screws and washers at all the corners of each piece.

NEW APPLICATIONS FOR PATENTS.

March 31.—5,590, F. Kilsey, Spring Hinges.—5,594, H. Lake, Pipe-couplings.

April 1.—5,599, J. Bloomfield, Material for Ceilings, Wall-linings, Cement Slabs, &c.

April 2.—5,703, W. Harford and W. Roberts, Supporting and Controlling Venetian Blinds.—5,709, O. Clausen, Manufacturer of Fire-clay and Magnesian Bricks, and Kilns for same.—5,719, A. Boult, Artificial Stone.

April 3.—5,734, J. Humphrey, Pivot Butt Hinge.—5,757, H. Fairbrother and M. Damon, Machine for Bending Wire Wall-ties.—5,772, C. Henlser, Clay Presses for making Tiles, &c.—5,787, C. Edwards, Manufacture of Drain-pipes, &c.

April 4.—5,807, J. Lauder and W. Thomson, Bath Walling and Floor-tiles.—5,810, T. Hydes, Manufacture of Hydraulic Cement, Concrete, Dry Mortar Bricks, Tiles, &c.—5,839, C. Tompson, Sanitary or Drainage-pipes.

PROVISIONAL SPECIFICATIONS ACCEPTED.

1,847, J. Mellor, Door Check or Closer.—2,389, J. Perry, Socket-bolt for Windows.—2,619, G. Downie, Smoke-consuming Apparatus.—2,655 W. Beetham and J. Thomas, Chimney Cowl.—2,763, C. Ehmann and F. Heaton, Window and Door Fastener.—3,237, M. Pickett and T. Collins, Sash Fittings and Frames.—3,693, T. Messenger, Combined Locks and Latches for Doors.—3,989, A. Boult, Fire-grates.—4,106, W. Hartridge, Preventing Escape of Smoke from Chimneys, &c.—4,287, T. Panario, Supplying Disinfectants to the Flushing-pipes of Urinals, &c.—4,428, J. Kaye, Latches for Doors.—4,750, The Société Anonyme des Ardoisières de Deville and another, Building Material.—4,779, T. James, Glazed Panels for Furniture and Interior Decorative Work.—4,990, J. Boyd-Wilson, Compositions for Use in Building Constructions, Fire-resisting Constructions, &c.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to Opposition for Two Months.

8,558, W. Coulson, Metallic Frames and Supports for the Glass, &c., of Greenhouse and other Roofs.—8,586, F. Eagleton, Range and other Stoves.—8,634, W. Cockburn, Securing Door Knobs to their Spindles.—8,817, K. Radler, Hinges.—1,280, A. Elmendorf and others, Water-closets.—2,823, C. Gannaway, Ventilators.—2,884, S. Van Vliet, Scaffold Brackets.—3,351, R. Coursen, Plaster Slabs.—3,724, R. Hermanns, Constructing Stairways.—3,763, C. Zander, Self-locking Apparatus for Doors.

COMPETITIONS, CONTRACTS, AND PUBLIC APPOINTMENTS.

COMPETITIONS.

Nature of Work.	By whom Advertised	Premium.	Designs to be delivered.
*Additional Wards, &c. at Dispensary Bury	Board of Management	20*l*. 10*l*. 5*l*.....	May 1
*Public Hall and Offices, Earlestown	Newton-in-Mackerfield Commissioners.....	50*l*. 25*l*. and 15*l*...	May 28

CONTRACTS.

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*York and Tar Paving, Kerbing, &c.	Hendon Local Board..	S. S. Grimley	April 20
*Kerbing, Tarpaving, Metalling, and Channelling Work	Lewisham Bd. of Wks	*Official*	April 21
*Pulling-down Buildings.....	Holborn Union	H. Saxon Snell	do.
*Fitting-up of Lavatories	Southend Local Board	*Official*.....	do.
*Compensation Reservoir	Nelson Corporation ..	J. Newton & Son	April 22
*Cast-iron Lamp Posts.....	Hackney Bd. of Works	J. Lovegrove	do.
New Gas Works, near Pontypridd.....	Ystrad Gas and Water Co.....	*Official* ..... J. W. Rounthwaite .	do. do.
Sixteen Houses, Stanley, Durham.....	Football Club	B. R. Evans	do.
Enclosing Grounds, Morriston, Glam.....			
Alterations to Premises, Dublin-road, Belfast	Boyd & Co.	J. Fraser & Son	do.
Flint Road Metal	Hollingbourne Hy. Bd.	J. Stanley Roper	do.
*Re-construction of Drainage and Sanitary Fittings	Kensington Guardians	J. W. Aldwinckle	April 23
Waterworks Extension	Ebbu Vale Local Board	T. J. Thomas	do.
Kerbing, Pitching, Flagging, and Macadam	Leek (Staffs.) Impt. Commrs.....	John Myatt	do.
Alterations and Additions to School, Roomfield	Todmorden Sch. Bd.	Jesse Horsfall	April 24
Re-building Brewery, Wickwar, Gloucestershire	Brewery Co.....	..... J. Lister Patchett	do do.
Eight Houses and Shop, Halifax.....	.....	H. J. Mackenzie.....	April 25
Road Materials, Bellie, Elgin.....	Altrincham Local Bd.	*Official*	do.
Draining, Paving, Flagging, &c.....	Middlesex C. C.	T. H. Pownall	do.
*Maintenance and Repairs of Roads	Rev. R. H. Smythe ..	.....	do.
Lecture Hall, Castleblayney, Ireland			
Restoration of Corn Exchange and Concert Hall.....	Maidstone Corporation	W. G. Scoones.....	do.
*Broken Granite.....	City of London Union	*Official*	April 27
*Swedish Firewood.....	do.	do.	do.
Wesleyan Chapel, Cumwhitton, Carlisle..	Rev. J. A. Rimmer ..	.....	do.
Improvements to several Streets	Barry & Cadoxton L.B.	J. C. Pardoe.....	do.
*Iron Fire Escape Bridge and Staircases ..	St. Marylebone Guar.	A. Saxon Snell	do.
*Painting, Colouring, and other Works ..	do.	*Official*.....	do.
*Two Street Sweeping Machines	Vestry of St. Mary, Islington	do.	do.
Heading-in Waterworks.....	Ripley Local Board ..	R. Argile	do.
Thirty-six Houses, Tyrarlwydd Estate, Mountain Ash, Glam.	Building Club.....	Thos. Roderick	do.
Cottage, &c. at Waterworks.....	Sandbach Local Board	W. Wyatt.....	do.
*New Offices	East Barnet Valley Local Board	F. W. Shenton	do.
Pair Semi-detached Villas, Stabling, and Walling, Halifax	.....	T. Lister Patchett	April 28
Engine House, Boiler, and Machinery for Waterworks	Brighton Corporation	*Official*.....	do.
*Roadmaking and Paving Works.....	Willesden Local Board	O. Claude Robson	do.
*Sewers, &c. Works	West Ham Council ..	Lewis Angell	do.
Schools and Class-rooms, Woodhouse-street, Leeds.....	.....	Geo. F. Danby	do.
Drainage Works, Ringles Cross	Uckfield Local Board	*Official*	do.
Blue Rag Stone (1,350 yards).....	Sheppey R.S.A.	do.	do.
*Repairs to Engines and Pumps, &c.....	West Ham Council....	Lewis Angell	do
Pulling-down Buildings, Erecting Walls, &c..	Selby Local Board....	Thos. Mallinson.....	April 29
*Re-newing Roof, Artillery Barracks, Woolwich	War Department	*Official*	do.
*Construction of New Roads, Sutton, Surrey.....	.....	Blake, Haddock, & Co.	do.

CONTRACTS.—*Continued.*

Nature of Work or Materials.	By whom Required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.
*Roadmaking and Paving Works.....	Fulham Vestry	W. Sykes	April 29
School, Trinant, near Crumlin	Mynyddislwyn Sch. B.	A. D. Edwards.....	do.
*York Paving Stone	Greenwich Bd. of Wks	*Official*.....	do.
Flint Road Metal	Uckfield Local Board	do.	April 30
Kerbing and Channelling, Bearwood-road	Smethwick Local Bd.	J. C. Stuart	do.
Forming, Sewering, and Metalling, Galton-street	do.	do.	do.
Subway, Contract No. 5	Glasgow District Subway Co.	Simpson & Wilson....	May 1
*Enlargement of Post-office, Coventry	Com. of H.M. Wks, &c	*Official*	do.
Widening Windsor-road Bridge, Cardiff..	Rhymney Rail. Co. ..	do.	do.
School Premises, Aberfan.....	Merthyr Tydfil Sch.B.	J. Williams	do.
Two Houses, Scotland-road, Stanwix, Carlisle	T. Ridley	Geo. Armstrong.....	do.
*Road Works.....	Southend Local Board	P. Dodd	May 2
*Boiler, Engine, Pumps, &c. for Waterwks	West Cowes Local Bd.	W. Brown.....	do.
*Engine and Boiler House, &c. (Waterwrks)	do.	do.	do.
*Storage Reservoir	Taunton Corporation Waterworks	*Official*	May 4
*Alterations to Covered Way at Darenth Asylum	Met. Asylums Board	do.	do.
*Painting, Repairs, &c.....	City of London Union	do.	do.
*Retort House and Coal Stores	Eastbourne Gas Co. ..	H. E. Jones, C.E.	do.
*Road Scarifier and Traction Engine	Hornsey Local Board	T. de Courcy Meade ..	do.
Kentish Rag Stone, &c.	Malling U.R.S.A.	J. Ennals	do.
Gasholder Tank.....	Newcastle-on-Tyne & Gateshead Gas Co...	*Official*	May 5
Labourer's Cottages, nr. Forres, N.B.	Wm. Brown.....	.....	do.
Constitutional Club, Hipperholme, Halifax	.....	Raymond Berry.....	May 9
*Precipitation Tanks (Main Drainage Scheme)	Manchester Corp.	J. Allison	May 19
Steel Rails (175,000 tons)	Govt. of New South Wales	*Official*	June 24
Block of Cottages, Corbridge-on-Tyne	H. S. Edwards.....	Montgomery & Carr ..	No date
Restoration of Church, Woodleigh, Mounts, Devon.....	.....	G. H. Fellowes Prynne	do.
Building Stone House, near Truro.....	.....	Henderson & Son	do.
Two Houses and Three Shops, Worksop ..	Geo. Smith	John Alsopp	do.
Vicarage, St. Aidan's, South Shields.....	..... .	J. H. Morton	do.
Broken Slag Road Metal, Chester-le-Street	Joseph Goldsbrongh..	.....	do.
Twenty Limestone Cottages, Shap, Westmoreland	Shap Granite and Patent Concrete Co.	.....	do.
Timber, Ironwork, &c. Castleford.....	Fryston Coal Co. Lim.	.....	do.
Storage Tank and other Waterworks, Deansbanger, near Stony Stratford....	Potterspury U.R.S.A.	J. Ingman & Shaw ..	do.
School Buildings, Board-room, &c. Stamford-road.....	Kettering Local Board	Gotch & Saunders	do
Stabling and Additions to "Field Head," Stanley, Leeds	Mrs. Croft.....	Smith & Tweedale....	do.
Institute, St. Mark's, Cathcart-street, Woodhouse, Leeds	Misses March	do.	do.
Vaults, Meeting Room, Stable, &c. Railway Hotel, Featherstone, Leeds	.....	Richardson & Simpson	do.
Catholic Church, Lloyd-street, Llandudno	.....	Edmd. Kirby	do.
*Alterations, &c. to Working Men's Club, Hackney.....	The Committee	W. Batten.....	do.
*Pulling-down and Re-erecting about 50 Boxes and Riding School.....	Neasden Model Farm	.....	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary	Applications to be in
*Clerk of Works	Bournemouth T. C...	3*l*. weekly	April 24
*Assistant Surveyor	Coventry Council	200*l*.	April 27
*Clerk to City Surveyor	do.	100*l*.	do.

Those marked with an Asterisk (*) are advertised in this Number. *Competitions, p.* iv. *Contracts, pp.* iv, vi, *and* viii. *Public Appointments, p.* xx.

MEETINGS.

SATURDAY, APRIL 18.

Crystal Palace School of Engineering.—Award of Certificates. Sir Douglas Fox will take the chair in the Lecture Room at 1 p.m.

Royal Institution.—Professor Silvanus P. Thompson on "The Dynamo." II. 3 p.m.

Edinburgh Architectural Association. — Visit to Fountainhall, Pencaitland Church, and Winton Castle.

Glasgow Architectural Association.—Visit to Largs.

MONDAY, APRIL 20.

Royal Institute of British Architects.—Messrs. W. B. Richmond, A.R.A., Ford Madox Brown, and N. H. J. Westlake, F.S.A., on "Decorative Painting." 8 p.m.

Surveyors' Institution.—Mr. Arthur Vernon on "Estate Fencing." 8 p.m.

TUESDAY, APRIL 21.

Institution of Civil Engineers.—Further discussion on Mr. R. E. B. Crompton's paper on "The Cost of the Generation and Distribution of Electrical Energy." 8 p.m.

THURSDAY, APRIL 23.

Society of Antiquaries.—Anniversary meeting. 2 p.m.

Institution of Electrical Engineers.—8 p.m.

FRIDAY, APRIL 24.

Architectural Association.—Mr. W. Scott Morton on "Method in Colouring." 7.30 p.m.

Institution of Civil Engineers (Students' Meeting).—(1) Mr. A. Sealy-Allin on "A New Type of Water-Motor." (2) Mr. H. Evington on "Hydraulic Power as applied to Pressing-Machinery." 7.30 p.m.

SATURDAY, APRIL 25.

Architectural Association.—Visit to the Weigh House Chapel, Duke-street, Grosvenor-square.

Royal Institution.—Professor Silvanus P. Thompson on "The Dynamo." III. 3 p.m.

NEW VENTILATING TILE.—Mr. Albert Gower sends us drawings and description of his new ventilating tile for admitting air under floors, the special features of which is that the perforated tile forming the exterior inlet is placed at a higher level than the interior opening, with a short vertical flue connecting them. The advantage is that the exterior inlet can be kept further from the ground, for ventilating ground floor joists, and is thus less liable to become choked with leaves or earth, or to admit damp.

ELECTRIC LIGHT FITTING.—Messrs. Rashleigh, Phipps, & Dawson send us a description and illustration of what they call their "patent ray diffuser" for covering the glass containers of glow-lights. It is a small jacket of beaded glass which can be fitted over the plain glass to reduce the glare without reducing the light.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

APRIL 6.—By *W. W. Jenkinson:* 40, 42, and 44, Church-st., and 1 to 11, Union-pl., Lee, u.t. 33 yrs., g.r. 16*l*., r. 200*l*. 12s., 725*l*.; 19, Crossfield-lane, Deptford, f., r. 22*l*. 2s., 160*l*.; 13 and 15, Giffen-st., f., r. 26*l*., 330*l*.; 20 and 49, Arthur-st., Chelsea, u.t. 15½ yrs., g.r. 9*l*., r. 87*l*., 365*l*.; 4, Selah-pl., u.t. 14 yrs., g.r. 1*l*. 1s., r. 20*l*. 16s., 45*l*.; 10 and 12, Little Europa-pl., Battersea, u.t. 54 yrs., g.r. 6*l*. 2s., r. 40*l*., 125*l*.—By *Toplis & Harding:* Freehold farm, near Banbury, 127a. 1r. 25p., r. 236*l*., 5,900*l*.; freehold grass farm, 40a. 1r. 19p., r. 90*l*., 2,250*l*.; 7, Rutland-ter., Pimlico, u.t. 34 yrs., g.r. 8*l*., r. 45*l*., 320*l*.; 3 and 5, Kilton-st., Battersea, u.t. 75 yrs., g.r. 8*l*., r. 52*l*., 380*l*.; 38, 39, and 40, Chatham-st., u.t. 74 yrs., g.r. 9*l*., r. 65*l*.. 420*l*.; 36 and 38, Lavender-rd, u.t. 47 yrs., g.r. 9*l*., r. 60*l*., 430*l*. By *Fleuret & Sons:* "The Grey Horse" P.H., Richmond-rd., Kingston, f., r. 60*l*., 1,900; "The Six Bells" f. Beerhouse, Albert-rd., Norbiton, r. 22*l*., 500*l*.; "The Jolly Brewers" f. Beerhouse, Canbury-alley, Kingston, r. 20*l*., 400*l*.; King Charles-rd., Surbiton, "The Castle" beerhouse, and two cottages, u.t. 13 yrs., 500*l*.;—By *B. Brown:* 53 and 55, Augusta-st., Poplar, u.t. 37 yrs., g.r. 6*l*. 10s., r. 48*l*., 300*l*.—By *W. J. Newell:* 17 and 19, Ambrose-st., Bermondsey, u.t. 47 yrs., g.r. 7*l*., r. 57*l*., 395*l*.; i.g.r. of 19*l*., Kentish Town, u.t. 58 yrs., g.r. 5*l*. 5s., 145*l*.; i.g.r. of 50*l*., Shoreditch, u.t. 28 yrs. g.r. 22*l*. 10s., 320*l*.; i.g.r. of 19*l*. 12s., Burton-cres., u.t. 16 yrs., g.r. 1*l*. 15s., 190*l*.; 8, Lynton-rd., Bermondsey, u.t. 38 yrs., g.r. 4*l*., r. 31*l*. 4s., 260*l*.; 94 and 98, Lynton-rd., u.t. 47 yrs., g.r. 9*l*., r. 66*l*. 6s., 550*l*.; 9 to 15 (odd), Frederick-st., Hatcham, u.t. 75 yrs., g.r. 12*l*., r. 93*l*. 12s., 575*l*.; 38 and 40, Knowle Hill-cres., and 42, Court Hill-rd., Lewisham, u.t. 77 yrs., g.r. 12*l*., r. 61*l*. 2s., 240*l*.; 23 to 28, Walpole-rd., Bromley, f., r. 106*l*. 12s., 725*l*.; 35 and 36, Blomfield-rd., f., r. 41*l*. 12s., 400*l*.—

APRIL 7.—By *A. Chancellor*: Freehold Rent of 107*l*. 10s., Chertsey, with reversion in 72 yrs., 2,125*l*.—By *E. J. Gairdner:* Three Freehold Cottages, East Sheen, r. 54*l*. 12s., 550*l*.; F. Cottage, r. 20*l*. 16s., 240*l*.—By *Wilkinson, Son, & Welch* (at Brighton), 22, Stanford-avenue, Brighton, f., r. 105*l*., 1,575*l*.—By *M. Vigers:* 29, Blackheath-hill, Greenwich, f., r. 39*l*., 510*l*.; A Plot of Freehold Land, 150*l*.; 11, Grove-st. and Cottage, f., r. 46*l*. 18s., 450*l*.; 18 and 20, Blissett-st., f., r. 44*l*. 17s., 450*l*.; A Plot of Freehold Land, area 7,600 ft., 270*l*.; 17 and 19, Blissett-st., f., r. 46*l*. 16s., 600*l*.; A Plot of Freehold Land, Blissett-st., area 21,690 ft., 510*l*.; A Plot of Freehold Land, Brand-st., 120*l*.; 3 and 4, Brand-st., f., r. 36*l*. 8s., 390*l*.; 102 to 108 (even), Royal-hill, f., r. 67*l*. 12s.. 830*l*.; 2, 3, and 4, Topham-pl., f., r. 53*l*. 6s., 430*l*.; 80 and 90, Royal-hill, f., r. 70*l*. 4s., 1,020*l*.; 27 to 31, Prior-st., u.t. 8 yrs., g.r. 17*l*. r. 106*l*. 4s., 240*l*.; 21 and 22, Royal-hill, f., r. 46*l*. 2s., 680*l*.

April 8.—By *J. Griffin & Son:* 15, Scrutton-st., City, f., r. 85*l*., 1,975; 11, 12, and 13, Clifton-pl., f., 865*l*.—By *F. Jolly & Co.:* 49 and 51, Gun-lane, Limehouse, f., r. 60*l*., 600*l*.; 74, Campbell-rd., Bow, u.t. 71 yrs., g.r. 4*l*. 10s., 370*l*.; 2 to 6, Lea-st., and 1 and 2, Kid's-ct., Stratford, u.t. 61 yrs., g.r. 26*l*., 160*l*.; 17 to 29 (odd), Sabbarton-st., Poplar, u.t. 61 yrs., g.r. 23*l*., r. 163*l*. 16s., 875*l*.; 11, 13, 19, 21, and 23, Gale-st., Bow, u.t. 83 yrs., g.r. 15*l*., r. 87*l*. 2s., 210*l*.; 8, Calverley-st., Mile End, u.t, 53 yrs., g.r. 4*l*. 17s. 6d., r. 29*l*. 18s., 175*l*.; 10 to 18 (even). Calverley-st., u.t. 53 yrs., g.r. 24*l*. 7s. 6d., r. 149*l*. 10s., 800*l*.—By *J. T. Ayton:* 49, Moody-st., Mile End, f., r. 23*l*. 8s., 245*l*.—By *Martin Vigers:* A Plot of Freehold Land, Stockwell-st., Greenwich, 450*l*.; "The White Hart" public-house, London-st., r., 3,400*l*.; 23 and 29, London-st., f., r. 76*l*. 12s., 950*l*.; 31, 33, and 35, London-st., f., r. 117*l*., 1,550*l*.; 41, 43, 45, and 47, London-st., f., 2,010*l*.; 49, 51, and 53, London-st., f., r. 85*l*. 16s., 1,300*l*.; 57, London-st., f., r. 44*l*. 4s., 780*l*.; 43 and 44, Royal-hill, f., r. 65*l*., 810*l*.; 13, 15, and 17, Royal-hill, f., r. 88*l*., 1,120*l*.; a plot of freehold land, Royal-hill, 170*l*.—By *Ellis, Morris, & Co.:* 59 and 60, Stanhope-gardens, Kensington, u.t. 60 yrs., g.r. 10*l*., r. 401*l*. 10s.. 6,400*l*.; 30 and 32, High-st., Sydenham, f., r. 140*l*., 1,870*l*.; 77, and 79, Crystal Palace-rd., Dulwich, u.t. 31 yrs., g.r. 12*l*., r. 62*l*., 350*l*.; 9, Western-villas, Southgate, u.t. 75 yrs., g.r. 10*l*.; r. 56*l*., 450*l*.

APRIL 9.—By *Lees & Burchell:* Reigate Mill and Cottages, Reigate Heath, and 1a. 0r. 19p., Copyhold, 1,000*l*. By *Whittingham & Sons:* 51 plots of freehold land, East Ham, subject to a payment of 542*l*., 400*l*.; 8 to 14 (even), Westeria-road, Lewisham, f., 2,600*l*.; 13, Thornford-rd., f., r. 22*l*., 310*l*.; a plot of freehold land, Westeria-rd., 540*l*. By *Briant & Son:* 30, Kemerton-rd., Brixton, u.t. 82 yrs., g.r. 6*l*., r. 54*l*. 12s., 300*l*. By *C. C. & T. Moore:* 30 and 32, Old Gravel-lane, Wapping, f., r. 43*l*. 8s., 600*l*. By *T. G. Wharton:* 2 to 8 (even), Longcroft-rd., Camberwell, u.t. 90 yrs., g.r. 27*l*., r. 168*l*. 10s., 960*l*. By *Newbon & Co.:* "Holley Grove House," Staines-rd., Hounslow, and 2a. 1r. 20p., 2,010*l*.; 34, Haringay-pk., Crouch End, f., 1,250*l*.; f.g.r. of 3*l*. 10s., with reversion in 56 yrs., Mount Pleasant-hill, 125*l*.; 77 and 100, Frampton-pk.-rd., Hackney, u.t. 48 yrs., g.r. 12*l*., r. 87*l*., 800*l*.; 6, Torriano-av., Camden Town, u.t. 48 yrs., g.r. 7*l*., 450*l*.; 3, Havelock-st., Islington, u.t. 64 yrs., g.r. 6*l*., r. 34*l*. 9s., 415*l*.; 74, Gifford-st., u.t. 58 yrs., g.r. 6*l*., r. 33*l*. 16s., 275*l*.; 218 and 220, New North-rd., u.t. 17 yrs., g.r. 8*l*., r. 68*l*., 360*l*.—By *M. Liell:* "Gaysham Lodge," High-rd., Ilford, f., r. 70*l*., 900*l*.; 1, Wright's-rd., and "The Essex Arms" beerhouse, North Bow, f., 1,010*l*.; 142, St. Stephen's-rd., f., r. 26*l*., 102 and 104, Ford-rd., Old Ford, f. r., 57*l*. 4s., 720*l*.; 34 to 38, Gawthorne-st., Bow, u.t. 57 yrs., g.r. 16*l*. 15s., 1,085*l*.; 1, 2, and 3, Mary Cottages, Leyton, f., r. 33*l*. 7s., 140*l*.; two plots of land, Selsdon-rd., Wanstead, f., 235*l*.; 16 and 17, King John-st., Stepney, u.t. 56 yrs., g.r. 6*l*., r. 63*l*. 18s., 540*l*.; 14, Ely-ter., Mile End, u.t. 18 yrs., g.r. 1*l*. 2s., r. 24*l*. 14s., 130*l*.; 38, Alfred-st., Bow, u.t. 55 yrs., g.r. 4*l*. 4s., r. 35*l*., 350*l*.; 22, Chadburn-st., Bromley, u.t. 51 yrs., g.r. 3*l*., r. 28*l*., 145*l*.; By *E. Stimson:* 2, 4, and 6, Gold-st., Stepney, u.t. 33 yrs., g.r. 9*l*., r, 94*l*. 16s., 580*l*.; 2, 3, 21 to 24, Regency-sq., Kennington, u.t. 41 yrs., g.r. 9*l*., r. 132*l*. 12s., 510*l*.;

16, Milford-st., Wandsworth-rd., u.t. 39 yrs., g.r. 6*l.* 6s., r. 26*l.*, 200*l.*; 74, Crownfield-rd., Stratford, u.t. 87 yrs., g.r. 4*l.* 10s., r. 30*l.*, 195*l.*; a plot of freehold land, Rushmore-rd., Clapton, 250*l.*; 79, Churchfield-rd., Acton, f., r. 28*l.*, 330*l.*

APRIL 10.—By *Jones, Lang, & Co.:* 10 and 12, Orbell-st., Battersea, u.t., 84 yrs., g.r. 14*l.*, r. 72*l.* 16s., 455*l.*—By *Segrave & Taylor:* 101, Malden-rd., Haverstock-hill, u.t. 60 yrs., g.r. 8*l.*, 335*l.*; 26, Maitland-pk.-rd., u.t. 60 yrs., g.r. 7*l.* 10s., r. 42*l.*, 355*l.*; 26 and 27, Chiswick-rd., Turnham-green, u.t. 78 yrs., g.r. 12*l*, r. 42*l.*, 350*l.*—By *B. Holsworth:* 9, 28 to 34 (even), Hassard-rd., Bethnal-green, f., r. 149*l.* 4s., 1,945*l.*; 1 to 4, Arline-st., f., r. 101*l.* 8s., 1,300*l.*; f. house and yd., Bridge-st., Homerton, r. 30*l.*, 520*l.*; 52, Allerton-st., Hoxton, u.t. 17 yrs., no g.r., 65*l.*; 29, Casterton-st., Hackney, u.t. 86 yrs., g.r. 6*l.*, r. 35*l.* 2s., 230*l.*; 37 and 39, Teal-st., u.t. 22 yrs., no g.r., r. 41*l.* 12s., 250*l.*—By *A. Robertson:* "Rye-hill House" and five plots of land, Peckham, 950*l.*; 25, Ball's-pond-rd., Kingsland, u.t., 16 yrs., g.r. 6*l.*, r. 45*l.*, 285*l.*; 38, Shrubland-rd., Dalston, u.t. 50 yrs., g.r. 5*l.* 12s. 6d., r. 34*l.*, 305*l.*; 60, Christie-rd., Hackney, u.t. 53 yrs., g.r. 4*l.* 10s., r. 27*l.*, 280*l.*

[*Contractions used in these lists,*—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; e.r. for estimated rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; yd. for yard, &c.]

PRICES CURRENT OF MATERIALS.

TIMBER.		
Greenheart, B.G.	ton	6/10/0 7/15/0
Teak, E.I...	load	8/10/0 14/0/0
Sequoia, U.S.	ft.cu.	2/3 3/0
Ash, Canada	load	2/10/0 4/5/0
Birch, do.		2/5/0 4/5/0
Elm, do.		3/10/0 4/15/0
Fir, Dantsic, &c.		2/0/0 3/15/0
Oak, do.		2/10/0 4/10/0
Canada		4/17/6 6/10/0
Pine, Canada red		2/10/0 3/10/0
Do, yellow		2/0/0 5/10/0
Lath, D'ntsic, fath		5/0/0 6/0/0
St. Petersburg		5/0/0 7/0/0
Deals, Finland, 2nd & 1st std	100	7/0/0 10/0/0
Do, 4th & 3rd		7/0/0 8/0/0
Do. Riga		6/0/0 7/10/0
St. Petersburg, 1st yellow		9/10/0 14/0/0
Do. 2nd yellow		8/0/0 9/0/0
Do. white		6/10/0 10/0/0
Swedish		6/10/0 15/0/0
White Sea		8/0/0 16/10/0
Canada, Pine 1st		13/0/0 24/0/0
Do. do. 2nd		9/0/0 15/10/0
Do. do. 3rd, &c.		6/10/0 10/0/0
Do. Spruce. 1st		8/10/0 10/10/0
Do. do. 3rd & 2nd		6/0/0 7/10/0
New Brunswick		5/0/0 7/0/0
Battens, all kinds		3/10/0 15/10/0
Flooring Boards, sq., 1 in. prep. 1st		0/10/0 0/14/0
Do. 2nd		0/9/0 0/10/6
Other qualities		0/5/0 0/7/6
Cedar, Cuba	ft.	/4 /4½
Honduras, &c.		/4 /4½
Mahogany, Cuba, St. Domingo, cargo av		/4½ /6½
Mexican do. do		/4½ /5½
Tobasco do. do		/5½ /7
Honduras do..		/5½ /6½
Box, Turkey	ton	4/0/0 13/0/0
Rose, Rio		10/0/0 20/0/0
Bahia		9/0/0 18/0/0

TIMBER (*continued*).		
Satin, St. Domingo	ft.	0/0/10 0/1/3
Porto Rico		0/0/10 0/1/6
Walnut, Italian.		0/0/3½ 0/0/7
METALS.		
IRON—Bar, Welsh, in London	ton	6/5/0 6/15/0
Do. do. at works in Wales		5/15/0 6/5/0
Do. Staffordshire, in London		6/5/0 7/0/0
COPPER—British, cake and ingot		56/0/0 57/0/0
Best selected		59/0/0 60/0/0
Sheets, strong.		68/0/0 0/0/0
Chili, bars		52/10/0 0/0/0
YELLOW METAL	lb.	0/0/6 0/0/6½
LEAD—Pig, Spanish	ton	12/10/0 12/11/3
English, com. brands		12/12/6 0/0/0
Sheet, English, 3 lbs. per sq. ft. and upwards		14/10/0 0/0/0
Pipe		14/10/0 0/0/0
ZINC—English sheet	ton	26/10/0 0/0/0
Vieille Montagne		27/0/0 0/0/0
TIN—Straits		90/10/0 0/0/0
Australian		90/15/0 0/0/0
English Ingots		94/10/0 0/0/0
OILS.		
Linseed	ton	21/17/6 22/2/6
Cocoanut, Cochin		36/0/0 0/0/0
Do. Ceylon		30/0/0 0/0/0
Palm, Lagos		26/10/0 0/0/0
Rapeseed, English pale		30/10/0 0/0/0
Do. brown		29/0/0 0/0/0
Cottonseed ref.		21/5/0 0/0/0
Oleine		21/15/0 24/0/0
Lubricating, U.S.		6/0/0 7/0/0
Do. refined		7/10/0 12/0/0
TAR—Stockholm	barrel	1/1/6 1/2/0
Archangel		0/13/6 0/0/0

TENDERS.

[Communications for insertion under this heading must reach us *not later than* 12 *noon on Thursdays.*]

BARRY (near Cardiff).—For the erection of fifty-seven houses and two shops for the Park Building Co. Mr. W. H. Dashwood Caple, architect, Cardiff:—

Stephens, Bastow, & Co.	£26,799	Alfred Elliott	£20,614
D. C. Jones & Co.	25,487	David Davies	20,14[illegible]
Reed, Blight, & Co., Ltd.	24,499	Chas. Shepherd & Son, Ltd. (accepted)	19,990
Jenkins & Arnold	24,440		

BELFAST.—For the erection of public baths in Templemore-avenue, for the Pub ic Health Committee of the Belfast Corporation. Mr. Robt. Watt, Architect, 77A, Victoria-street, Belfast. Quantities by Messrs. S. & W. H. Stephens, Donegall-place, Belfast:—

W. J. Campbell & Son, Clifton-street, Belfast* .. £8,300 0 0
* Lowest of seven tenders received.

Engineering, Plumbing, Gasfitting, &c.

Riddell & Co., Donegall-place, Belfast* £1,733 15 0
* Lowest of seven tenders rebeived.

BRISTOL.—For the erection of a new warehouse in Maryleport-street, Bristol, for Messrs. Lindrea & Co. Mr. Herbert J. Jones, architect, Wellington-chambers, 12, Bridge-street, Bristol. Quantities by the architect:—

E. Walters	£1,169	Wm. Church	£939
J. Bastow	1,150	J. E. Davis	930
Stephens, Bastow, & Co.	1,089	G. Humphreys	925
J. Perrott	990	W. Cowlin & Son	887
Eastabrook & Sons	986	R. Wilkins & Sons*	866
E. T. Hatherley	947	* Accepted.	

[All of Bristol].

CARDIFF.—For proposed extension and alterations to the Wood-street School, Cardiff, for the Cardiff School Board. Messrs. George E. Robinson & Salmond, A.M.I.C.E., architects, 32, St. Mary-street, Cardiff:—

T. R. Waterman	£5,292 10 0	Charles Dunn	£4,503 9 3
John Haines	4,834 16 9	Burton & Company.	4,488 15 0
Charles Shepherd & Son	4,812 0 0	Henry Davies	4,260 2 11
David Davies	4,730 0 0	E. Turner & Son, Penarth-road*	4,116 16 0
Thomas Gough	4,612 15 6	* Accepted.	

[All of Cardiff,]

CARDIFF.—For additions to Board Schools, Rumney, near Cardiff. Mr. J. P. Jones, architect, Cardiff:—

Burton & Co.	£1,290 0 0	G. Griffiths	£1,070 0 0
H. Davies	1,285 0 7	Gibbon & Hodgkinson	1,051 0 0
T. Gough	1,153 0 0	A. Elliott	1,042 0 0
D. J. Davies	1,100 0 0	C. Shepherd & Son, Limited (accepted)	1,032 0 0
Caskell	1,075 0 0		
D. Davies	1,073 0 0		

CARDIFF.—For drainage, Green Farm, near Cardiff, for Mr. Jas. Howell. Mr. J. P. Jones, architect, Cardiff:—

H. Osmond	£158 18 9	D. Davies	£124 0 0
Pearson	140 0 0	Chas. Shepherd & Son, Limited*	114 0 0
F. S. Lock	138 0 0	* Accepted.	
Jones Bros.	131 0 0		

BISHOP AUCKLAND.—For providing and laying about 15,396 yds. sewerage pipes and works in connexion with the Crook drainage, for the Union Rural Sanitary Authority. Mr. C. Johnston, Surveyor, 8, Tenters-street, Bishop Auckland. Quantities by Mr. George Bell, 60, Collingwood-street, Newcastle:—

	Section 2.	Section 3.	Section 4.	Section 5.	Section 6.	Section 7.
	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.	£. s. d.
Thos. Dixon	1,622 0 0*	988 0 0*	209 0 0*	1,323 0 0*	529 0 0*	466 0 0*
Ralph Walker	—	—	—	—	—	634 6 7
Nicholson & Elliott	—	—	—	—	242 16 4	686 19 6
George Hetherington	—	—	348 14 6	992 3 10	629 9 7	643 19 2
George Hector Bell	3,294 0 0	1,600 5 9	397 8 6	1,323 16 0	792 3 9	687 6 4
Joseph Goldsbrough	—	—	279 16 1	—	683 10 10	—
Parker & Sharp	3,816 17 4	1,629 6 6	460 14 1	1,533 15 0	795 10 9	776 12 6
Walkdue & Co.	7,800 0 0†	—	—	5,946 0 0‡	—	—
Jno. T. Simpson	3,515 3 9	1,679 9 4	306 12 8	1,303 0 0	790 2 2	689 6 7
Wm. Lister	3,544 0 0	1,644 0 0	378 0 0	1,482 0 0	906 0 0	672 0 0
Thos. Walton	3,700 0 0	2,000 0 0	400 0 0	1,500 0 0	900 0 0	920 0 0
Riley Hopkinson	5,300 0 0	2,230 0 0	456 7 0	1,785 0 0	1,384 10 0	985 0 0
Jno. Carrick	3,552 0 0	1,300 0 0	310 0 0	1,078 0 0	610 0 0	550 0 0

* Sanitary pipes excluded. † Total for six sections. ‡ Total for six sections, sanitary pipes excluded.

CARDIFF.—For pitching, paving, and channelling streets, for the Town Council. Mr. W. Harpur, Borough Engineer, Cardiff. Quantities supplied:—

T. R. Waterman	£3,838 14 0	Richard Smith	3,225 3 6
James Allan	3,613 17 6	T. R. Williams, Cardiff*	2,665 10 7
J. C. Pearson	3,417 5 0	* Accepted.	
Thomas Harries	3,230 0 0		

CARDIFF.—For stores, for the South Wales Drug Stores, Limited, Cardiff. Mr. J. P. Jones, architect, Cardiff:—

Cousens Bros.	£1,149	David Davies	£995
R. Price	1,090	Chas. Shepherd & Son, Limited	974
James Allan	1,080	Turner & Sons*	968
Jones Bros.	1,067	* Accepted.	
Wm. Symonds	1,062		

CARDIFF.—For re-building the "Borough Arms," for Mr. James Howell. Mr. J. P. Jones, architect, Cardiff:—

D. J. Davies	£5,320 0 0	Jones Bros.	£4,650 0 0
James Allan	5,202 0 0	Geo. Griffiths	4,650 0 0
E. Turner & Sons	5,088 0 0	R. Price	4,420 0 0
D. Davies	4,870 0 0	Jas. Thomas	4,400 0 0
Burton & Co.	4,766 0 0	Chas. Shepherd & Son, Ltd.*	4,379 0 0
H. Davies	4,718 15 6	* Accepted.	

CHESTER-LE-STREET.—For additions to business premises at Craghead, near Chester-le-Street, for Messrs. Thos. Hedley & Bros. Mr. J. Wm. Rounthwaite, architect, Blackhill, co. Durham. Quantities by the architect:—

Thos. Hilton	£945 0	Thos. Foster & Son	£896 0
John Jennings, Chesterle-street (accepted)	898 0	Kell & Groves	874 17
		Wm. Surtees	789 12

[Some other tenders for separate trades were also received.]

DUNGARVAN.—For the excavation and completion of a two-million-gallon reservoir, and incidental works, for the Town Commissioners. Mr. M. Beary, Borough Surveyor, Dungarvan, Ireland:—

Contract No. 1.

G. Stokes	£2,244 0 0	R. Simpson	£1,662 14 2
Barry Bros.	1,970 0 0	E. Finn, Charleville*	1,644 0 0
T. P. Purcell	1,975 0 0		

Mr. N. Williams tendered for Contracts 1 and 2 at £4,055.
[Engineer's estimate, £1,865.]
* Accepted, with No. 2 Contract, conditionally.

DUNGARVAN.—For supplying and fixing pipes, valves, sluices, fountains, hydrants, &c., for water supply, for the Town Commissioners. Mr. M. Beary, Borough Surveyor, Dungarvan, Ireland:—

Contract No. 2.

Geo. Stokes	£2,497	Baird	£3,021
Barry Bros.	2,500	J. Donohoe	2,491
T. P. Purcell	2,250	E. Finn, Charleville*	2,350
R. Simpson	2,527		

Mr. N. Williams tendered for both 1 and 2 at £4,055.
[Engineer's estimate. £2,392.]
* Accepted, with No. 1, conditionally.

ELSTREE (Herts).—For new billiard-room to Queensberry Lodge, Elstree, for Mr. Frank Hurst. Mr. E. P. Loftus Brock, architect:—

Allen & Son	£690	Mattock Bros.	£543
Batchelor	680	Hicks	507
Nye	559		

HANLEY.—For the erection of shop premises in the Upper Market Square, and a house in New-street, for Messrs. W. & H. Acres. Messrs. Ralph Dain & Son, architects, Hanley:—

J. K. Tildesley	£3,250	H. & R. Inskip	£2,788
J. Gallimore	3,150	C. Cornes	2,725
H. Redfern	3,125	J. T. Clarke	2,707
G. Ellis	2,899	T. Godwin, Hanley*	2,700
N. Bennett	2,799	J. Bowden	2,660
J. Brindley	2,790	* Accepted.	

LINCOLN.—For the erection of a pair of semi-detached villa residences, St. Peter's at Gowts, Lincoln, for Mr. J. H. Foster. Mr. W. Watkins, architect, Lincoln. Quantities by the architect:—

J. Horton, Lincoln (accepted) £1,439 14 6

LINCOLN.—For the erection of stables at Aisthorpe Rectory, nr. Lincoln, for the Rev. T. Bury. Mr. W. Watkins, architect, Lincoln. Quantities by the architect:—

W. Wright & Sons	£398	J. Hill	£379
Otter & Broughton	389	J. B. Harrison, Lincoln*	369
		* Accepted.	

LONDON.—For the erection of premises, No. 1, High-street, Aldgate, E. Messrs. H. H. Bridgman & Goss, architects, 42, Poultry, E.C.:—

	If Mansfield stone used.	If Monk's Park stone used.
Rudd & Son	£4,665	—
J. Greenwood	4,576	£4,306
J. Mortar	4,464	—
B. E. Nightingale	4,296	4,011
Kirk & Randall	4,169	3,999
Neave & Neave	4,000	3,750
Josolyne, Young, & Co.	3,997	3,847
Perry & Co.	3,997	3,722
E. Lawrance & Sons	3,989	3,699
J. W. Dixon	3,923	3,643
E. Toms	3,883	3,598
Scrivener & Co.	3,858	3,548
S. R. Lamble, Kentish Town (accepted)	3,787	3,495

LONDON.—For the erection of a residence at Frognal-gardens, Frognal, Hampstead, for Mr. Walter Besant. No quantities supplied. Mr. James Neale, F.S.A., architect and surveyor, 10, Bloomsbury-square, London, W.C.:—

Allison & Faskett, Holly-hill, Hampstead (accepted) £2,013 17 0

LONDON.—For rebuilding the "Phœnix" public-house, Upper East Smithfield, for Mr. Francis Gill. Mr. Chas. J. C. Pawley, architect, 2, Princes Mansions, Victoria-street, S.W. Quantities by Mr. Harry England, Uxbridge road, W.:—

J. Mansbridge	£2,918	Gill Bros.	£2,727
Brown Bros.	2,871	C. F. Hewlitt	2,675

LONDON.—For alterations and additions to the "Acorn" public-house, Great Cambridge-street, Hackney-road, for Mr. A. Steadman. Mr. E. E. Niblett, architect:—

Trent Bros.	£1,395 0 0	J. Ivory	£1,145 0 0
Burman & Sons	1,170 0 0	W. Higgs*	1,039 10 0
G. E. Todd	1,149 0 0	* Accepted.	

LONDON.—For schools at St. Mark's, Peckham, for the Rev. George Collett. Messrs. Newman & Newman, architects and surveyors, 31, Tooley-street, London Bridge, S.E.:—

	Parish-room.	Future class-room.
H. Quennell	£1,530 0 0	£179 0 0
J. Bullers	1,513 0 0	189 0 0
H. L. Holloway	1,492 0 0	150 0 0
C. Ansell	1,414 0 0	202 0 0
J. O. Richardson	1,268 0 0	181 0 0
Balaam Bros.	1,242 0 0	163 10 0
W. & H. Castle (accepted)	1,177 0 0	—

LONDON.—For re-building and finishing stable at 31, Harley-mews North, for Mr. R. J. Godlee. Mr. Alexander Payne, architect, 4, Storey's-gate, St. James's Park, S.W.:—

W. Downs	£996 0	Stimpson & Co.	£888 6
Dove Bros.	975 0	G. H. & A. Bywaters	876 0
Hall, Beddall, & Co.	965 0	G. S. C. Williams & Son	867 0
Perry & Co.	930 0	S. Pocock	861 0
Hill Bros.	927 10	Wm. Longmire & Co.*	838 0
H. & E. Lea	890 0	* Accepted.	

LONDON.—For the erection of a mission-house, for St. John's Parish, Stamford-hill, N. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement, E.C. Quantities by Mr. C. W. Brooks:—

	Slates.	Tiles. extra.
Paine Bros., Stamford-hill, N.	£1,031 0 0	£37 8 9
Knight & Sons, Tottenham	954 0 0	31 6 6
P. Hart, Tottenham	879 0 0	19 0 0
A. Porter	869 0 0*	10 0 0
* Accepted.		

LONDON.—For the erection of ten houses in the Buchan-road, Peckham, for Mr. H. Hammond. Mr. Fred. G. Grierson, architect, 9, Old Jewry-chambers, Cheapside, E.C.:—

W. H. Greenwood, Lavender-hill, Wandsworth* £2,000
* Accepted. [No competition.]

LONDON.—For alterations and additions to the "Carlton" public-house, Kentish Town, for Mr. G. Branson. Mr. E. E. Niblett, architect:—

W. & L. Ransom, Contract No. 1 (accepted) £548 0 0

LONDON.—For alterations and additions to the "Red Lion," Portland-street, Poland-street, W., for Mr. Alfred Abery. Mr. E. E. Niblett, architect:—

W. & L. Ransom	£765	Burman & Sons	£749
W. Evans	753	G. E. Todd (accepted)	745

LONDON.—For building an addition, for Messrs. J. Salomon & Co., Bermondsey, S.E. Mr. Delissa Joseph, architect, Basinghall-street, E.C.:—

R. H. Bax, Highbury (accepted) £344 10 0

LONDON.—For paving works, &c., in Rosebery-avenue, for the London County Council. Mr. A. R. Binnie, Engineer:—

J. Dickson	£22 864 6 6	Scott & Co.	£18,848 16 8
G. Bell	20,670 0 0	Mowlem & Co.	18,031 0 0

LONDON.—For sewerage works in Mitcham-lane, Streatham, for the London County Council. Mr. A. R. Binnie, Engineer:—

E. & W. Iles	£7,545 0 0	T. Adams	£5,459 2 3
J. Dickson	7,191 14 7	H. Knight	4,835 0 0
Cooke & Co.	5,821 0 0		

LONDON.—For alterations and additions to Ladywell Steam Laundry, Lewisham. Mr. Robert Burr, architect, 25, Fulham Park-gardens, Fulham, S.W.:—

W. Jackson	£780 0 0		
J. Holt, 14, Brompton-square, S.W. (accepted)	750 0 0		

LONDON.—For alterations and repairs to Nos. 37 and 38, Baltic-street, St. Luke's. Mr. Robert Burr, architect, 25, Fulham Park-gardens, Fulham:—

B. Wire	£220 0	Wells & Son	£148 10
J. J. Thompson	173 10	W. Byford, Battersea*	135 0
		*Accepted.	

LONDON.—Accepted for pulling-down and re-building the "Frying Pan" public-house, Brick-lane, Spitalfields, E., for Messrs. Truman, Hanbury, & Co. Mr. Spencer W. Grant, architect, 63, Finsbury-pavement, E.C. Quantities by Mr. C. W Brooks:—

Jas. Smith & Sons, Norwood £1,185 0 0
For full list see last week, p. 301.]

MANSFIELD (Notts.).—For erecting villa residence at Mansfield, Notts., for Mr. W. H. Robinson. Mr. R. Frank Vallance, architect, Mansfield:—

H. S. & W. Close	£960 0 0	J. J. Baynes	£863 14 7
S. & G. Frisby	940 0 0	B. Keilling (too late)	800 0 0
Edward Cuddy	898 10 0	Evans & Sutton, Sutton-in-Ashfield*	800 0 0
C. Houldsworth	877 0 0		
* Accepted.			

MANSFIELD (Notts.).—For additions to Berry Hill Hall, Mansfield, Notts. Mr. R. Frank Vallance, architect, Mansfield:—

S. & G. Frisby	£7,700	John Greenwood	£7,600
Fisher Bros	7,653	Charles Vallance	7,048
W. A. Vallance	7,610		

[All of Mansfield.]

MARKET RASEN (Lincolnshire).—For the erection of a dwelling-house and stables, for Dr. Geo. H. Barton. Mr. W. Watkins, architect, Lincoln:—

Joshua Harrison	£1,871 10	J. W. Harrison	£1,743 0
H. S. & W. Close	1,842 0	W. Wright & Sons, Lincoln (accepted)	1,735 0
J. B. Harrison	1,830 0		

MERRIOTT (near Crewkerne, Somerset).—For residence, Marks Barn, for Major Hayward. Messrs. Charles Kirk & Sons, architects, Sleaford, Lincs. Quantities supplied:—

H. J. Robinson	£7,140	Cornish & Gaymer	£6,365
Meyrick & Son	6,954	J. H. Kingerlee	6,090
Rudd & Son	6,444	W. H. Maxey (accepted)	5,795
Lye & Son	6,375		

SHEFFIELD.—For the erection of two residences at Rannoor, for Mr. Hy. Augustus Guy. Mr. Herbert W. Lockwood, architect, Church-street, Sheffield. Quantities by the architect:—

Oxley Bros.	£2,115 0	Jas. Holmes	£1,896 0
Jno. Robertson	2,030 0	C. H Gillam	1,864 10
Jno. Morton	2,000 0	Thos. Roper, Broomhill	
Chas. Chadwick	1,995 0	(accepted)	1,825 0

[All of Sheffield.]

SHIPLEY (Yorks).—For Salvation Army Citadel, Shipley, Yorks. Mr. W. Gillbee Scott, architect, 25, Bedford-row, London, W.C.:—
Rhodes Bros, Shipley (accepted) £1,343 0 0

SOUTHAMPTON.—For building "Le Dausk" margarine factory, Southampton, for Mr. A. Pelleriu, of Paris. M. E. Brunnarius, architect, Paris Mr. J. G. W. Aldridge, engineer, Southampton:—

J. Thompson	£17,764	H. Evans	£14,900
W. Ward	16,800	Morgan, Isted, & Morgan	14,772
Jenkin & Son	15,897	T. W. Sanders	14,786
Kingerlee	15,732	Lewis	14,600
Reed, Blight & Co., Limited, Plymouth*	15,000	T. Dyer & Sons	14,375
W. E. Light	14,920	Bull & Sons	14,227
		T. W. Roe & Co.	13,535

* Accepted.

SWANSEA.—For the erection of the Charles Bath Memorial Hall, for the Vicar and Churchwardens of Christchurch, Swansea. Mr. T. P. Martin, architect, Heathfield-street, Swansea. Quantities by the architect:—

Jenkins Bros.	£1,350	C. Walters	£1,099
Gustavus Bros.	1,146	J. D. Williams	1,035
Nelson Joinery Co.	1,109	D. C. Jones, Gloucester*	989
Thos. Watkins & Jenkins	1,100		

* Accepted.

TOTTENHAM.—For new infants' school and additions to present schools at Stamford-hill, for the Tottenham School Board. Mr. Charles Bell, architect, 3, Salters'-hall-court, E.C. Quantities by Messrs. D. Campbell & Son:—

Jackson Bros.	£9,222 0	R. G. Battley	£6,982 0
Stephens, Bastow, & Co.	7,845 0	Fairhead & Son	6,950 0
Wood & Co.	7,647 9	W. Brass & Son	6,647 0
Flew & Co.	7,460 0	C. Wall	6,380 0
Chessum & Sons	7,350 0	Allen & Sons	6,350 0
J. Linzell	7,250 0	J. O. Coxhead	6,289 0
S. & W. Pattinson	7,161 0	A. Hood, 471, Bethnal-green-road*	6,225 0
J. Mills	7,117 0		
Balaam Bros.	7,062 0		

* Accepted conditionally.

TUNBRIDGE WELLS.—For the construction of pipe sewers, with manholes, and an iron rising main, with pumps, &c., at Groombridge, for the East Grinstead Union Rural Sanitary Authority. Mr. Urban Smith, C.E., 2, Victoria-mansions, Westminster, S.W.:—

Jas. Dickson	£2,283 14 0	A. Foster	£1,856 9 7
S. Hipwell	2,241 17 6	J. Morris	1,802 0 0
H. Hill	2,030 0 0	W. Cunliffe	1,755 0 0
Perrin & Long	2,010 13 7	Dupont, Colchest.r*	1,649 16 3

* Accepted.

UXBRIDGE.—For new residence and additions, and forming new roads, &c., to Moorcroft House, Hillingdon:—
C. F. Kearley, Uxbridge (accepted) £3,033
[No competition.]

WEST HAM (Essex).—For main drainage extension works, for the Corporation of West Ham. Mr. Lewis Angell, Borough Engineer:—

Contract No. 12.

A. M. Robertson & Co.	£1,761 0	Spurr, Inman, & Co.	£1,250 0
J. Rennie & Co.	1,570 0	Glinson & Co.	1,230 0
Hawksley, Wild, & Co.	1,450 0	Penman & Co.	1,220 10
R. Hornsby & Son	1,435 0	J. Adamson & Co.	1,182 0
Jno. Bellamy	1,364 0	J. Watt & Co. (accepted)	1,170 0
Thames Iron Works	1,361 9	Marshall, Fleming, & Co.	1,100 0
Fraser & Fraser	1,253 0	Ed. Danks	1,060 0
W. H. Wood & Co.	1,250 0	Jno. Thompson	1,030 0

Contract No. 13.

Robertson & Co.	£3,245	J. & H. Gwynne	£1,990
Marshall, Fleming, & Jack	2,035	J. Watt & Co. (accepted)	1,675

Contract No. 14 (*withdrawn*).

Contract No. 15.

J. Jackson*	£1,650 0 0	W. Neil (accepted)	£1,579 17 4

WITTON GILBERT (Durham).—For alterations to "The Firs," near Witton Gilbert, for Mr. W. Logan. Mr. J. Wm. Rounthwaite, architect, Blackhill, co. Durham:—

Frank Dixon	£101 9 0	Wm. Strachan, Black-hill*	£71 1 9
Jas. Laidler	80 0 0		
L. Urwin	77 10 0		

* Accepted.

YEOVIL.—For providing and laying Keinton stone, paving, kerking, and water table, for the Corporation. Mr. W. Armytage, Borough Surveyor, Yeovil:—
T. Squire & Sons, Keinton Mandeville.
New paving ..... 6½d. per ft. superficial.
New kerbing ..... 8d. per ft. lineal.
New water table.... 8½d. per ft. lineal.

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Advertisements for the current week's issue must reach the Office before THREE o'clock p.m. on THURSDAY, but those intended for the front Page should be in by TWELVE noon on WEDNESDAY.

SPECIAL.—ALTERATIONS IN STANDING ADVERTISEMENTS or ORDERS TO DISCONTINUE same must reach the Office before TEN o'clock on WEDNESDAY mornings.

The Publisher cannot be responsible for DRAWINGS, TESTIMONIALS, &c. left at the Office in reply to Advertisements, and strongly recommends that of the latter COPIES ONLY should be sent

PERSONS Advertising in "The Builder" may have *Replies addressed to the Office, 46, Catherine-street, Covent Garden, W.C. free of charge.* Letters will be forwarded if addressed envelopes are sent, together with sufficient stamps to cover the postage.

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Ditto, ditto, with Carved or Painted Panels, prices according to sketches.

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BOX GROUND. COMBE DOWN.
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THE BATH STONE FIRMS, Limited.
HEAD OFFICES: BATH.

DOULTING FREESTONE.

THE CHELYNCH STONE. The stone from these quarries is known as the "Weather Beds," and is of a very crystalline nature, and undoubtedly one of the most durable stones in England.

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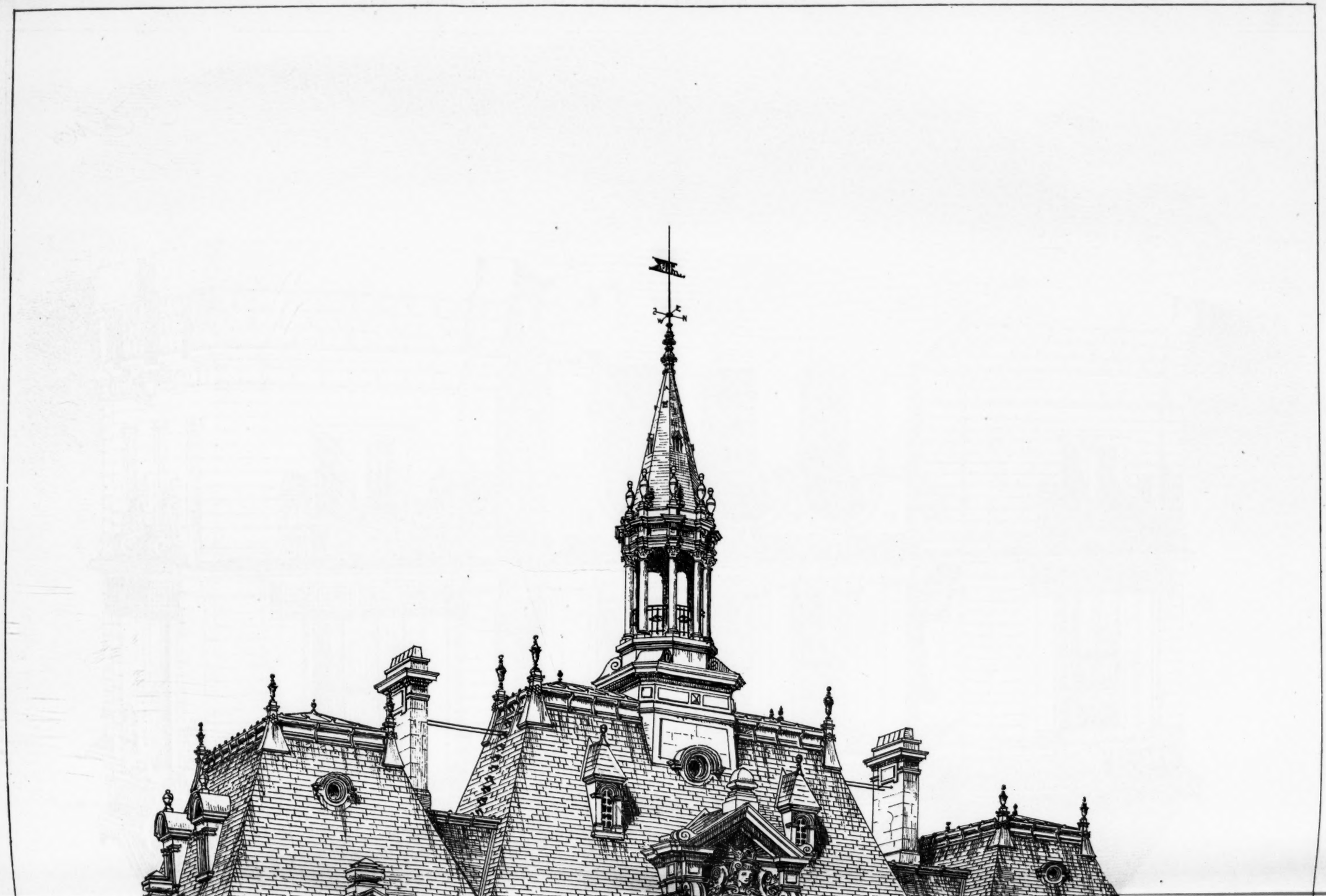


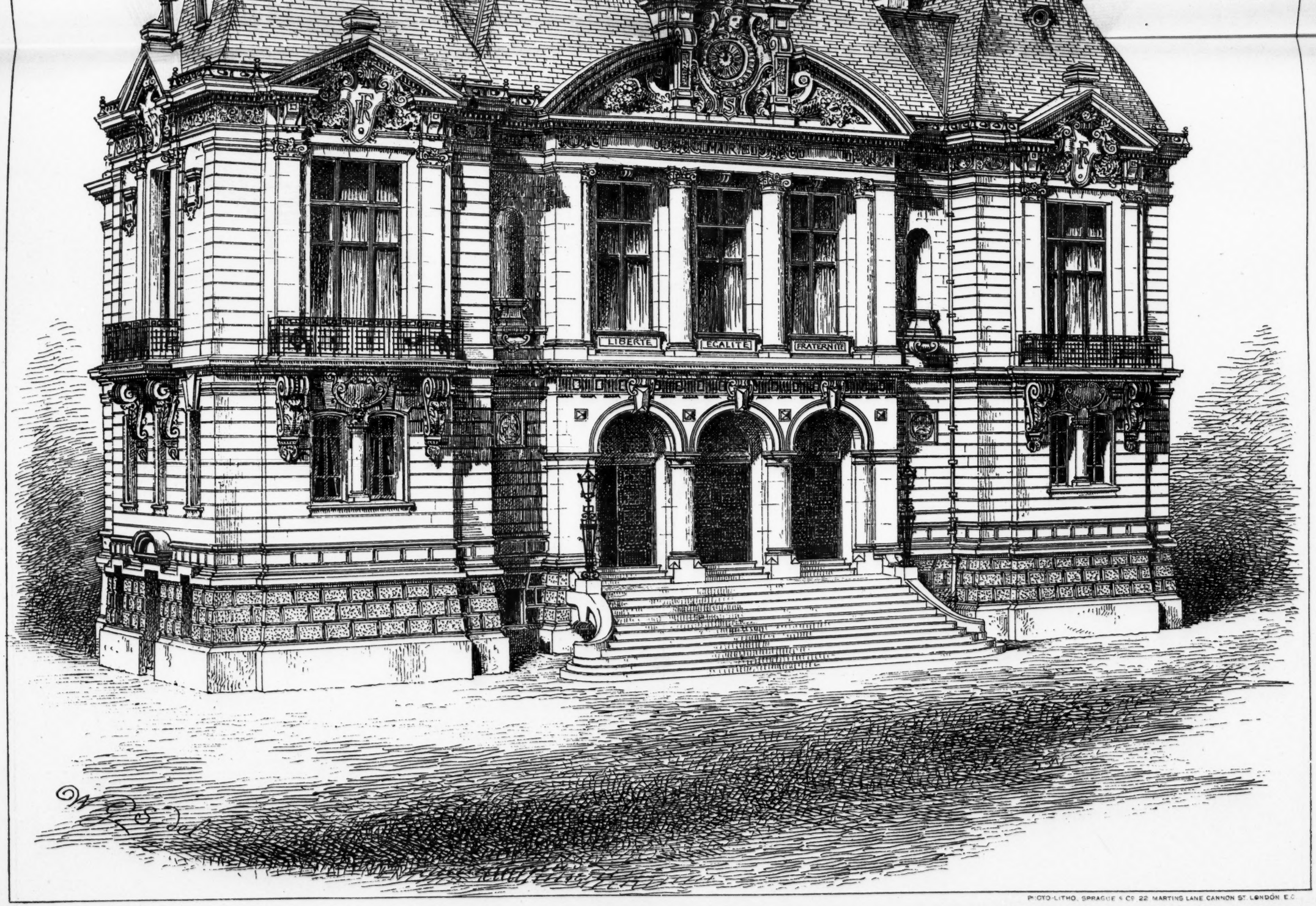
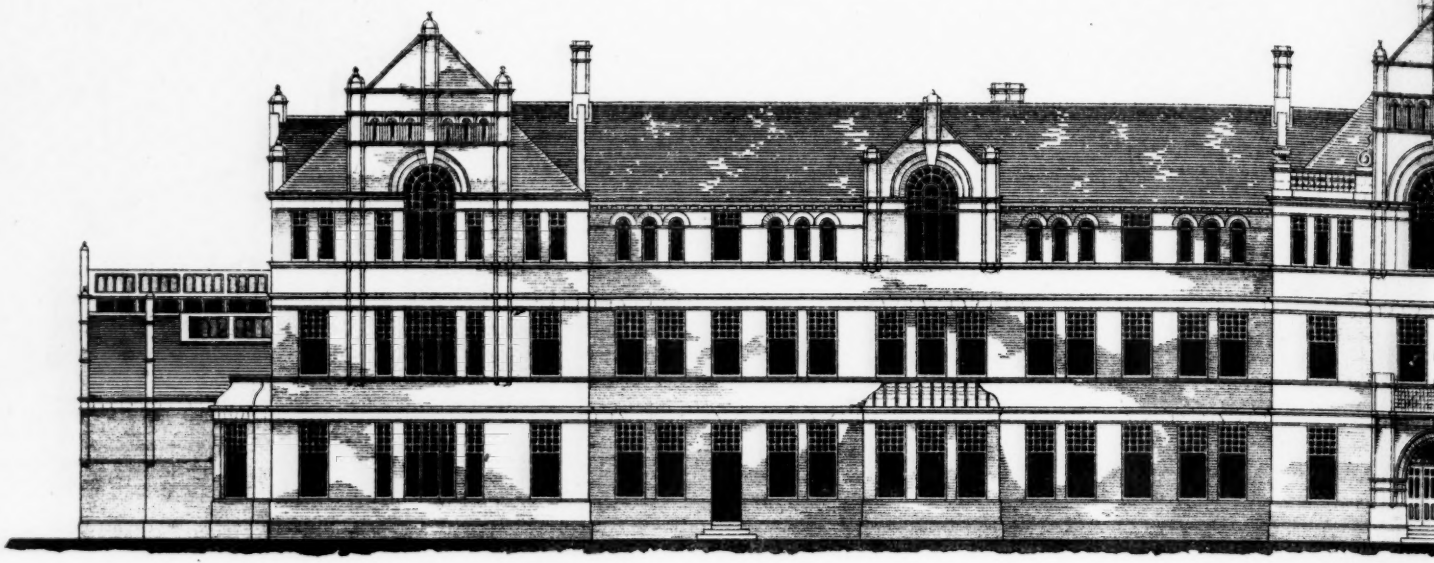


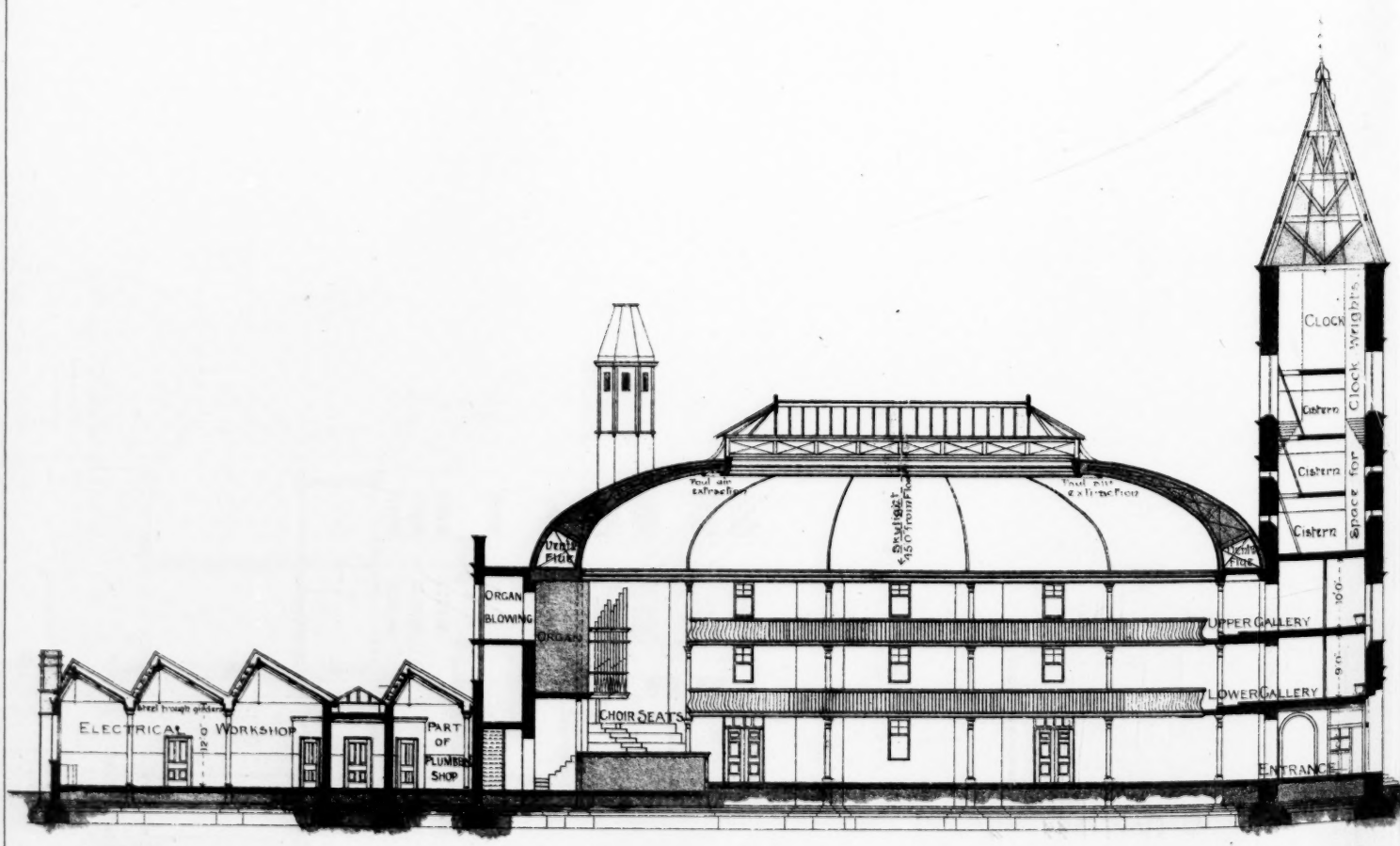
PHOTO-LITHO. SPRAGUE & CO. 22 MARTINS LANE CANNON ST. LONDON E.C.

THE NEW MAIRIE, SURESNES, PARIS.—M. Bréasson, Architect.

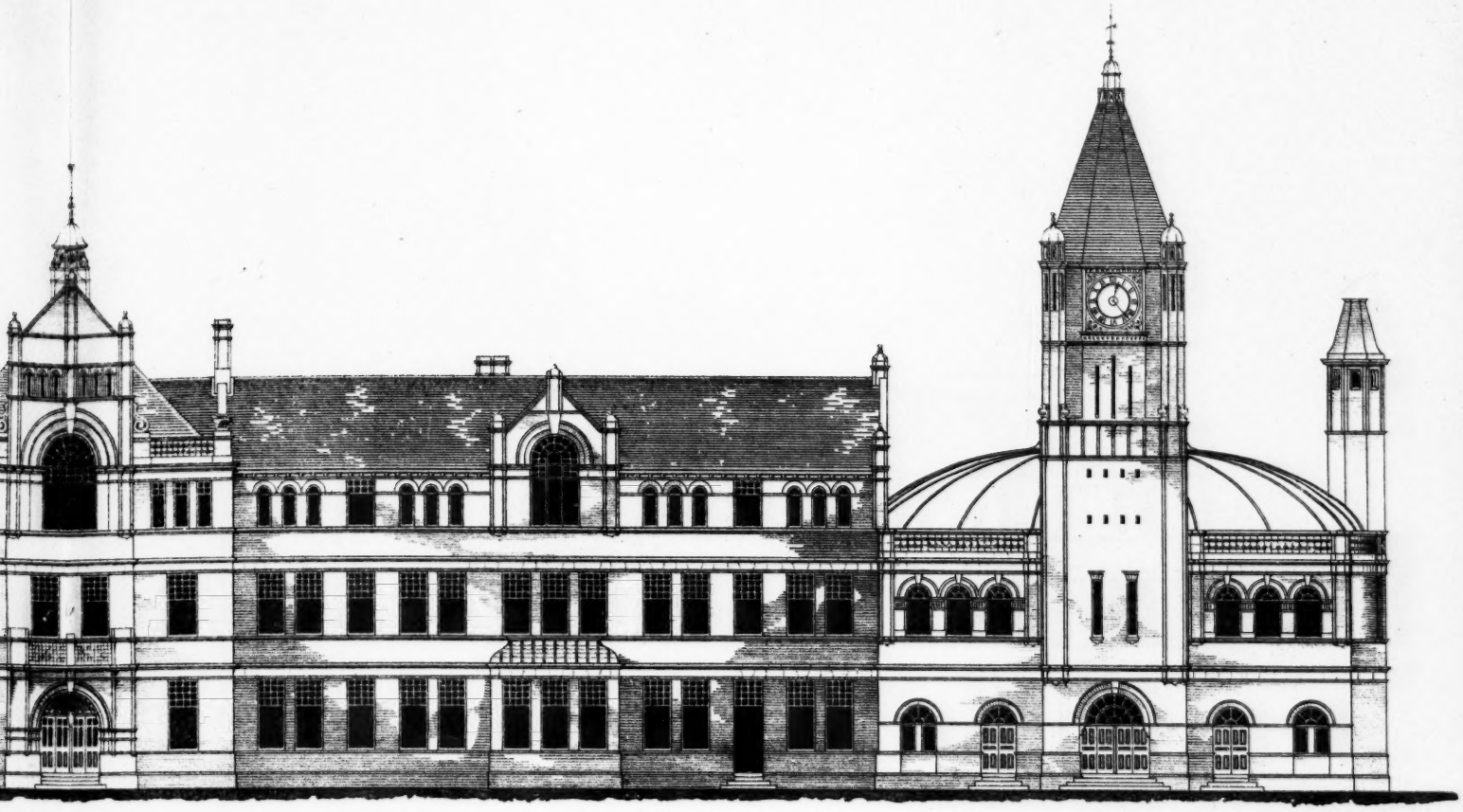


SOUTH

SCALE OF



SECTION G-H.



H ELEVATION.

0 10 20 30 40 50 60 70 80 90 100 FEET

SECTION C-D.

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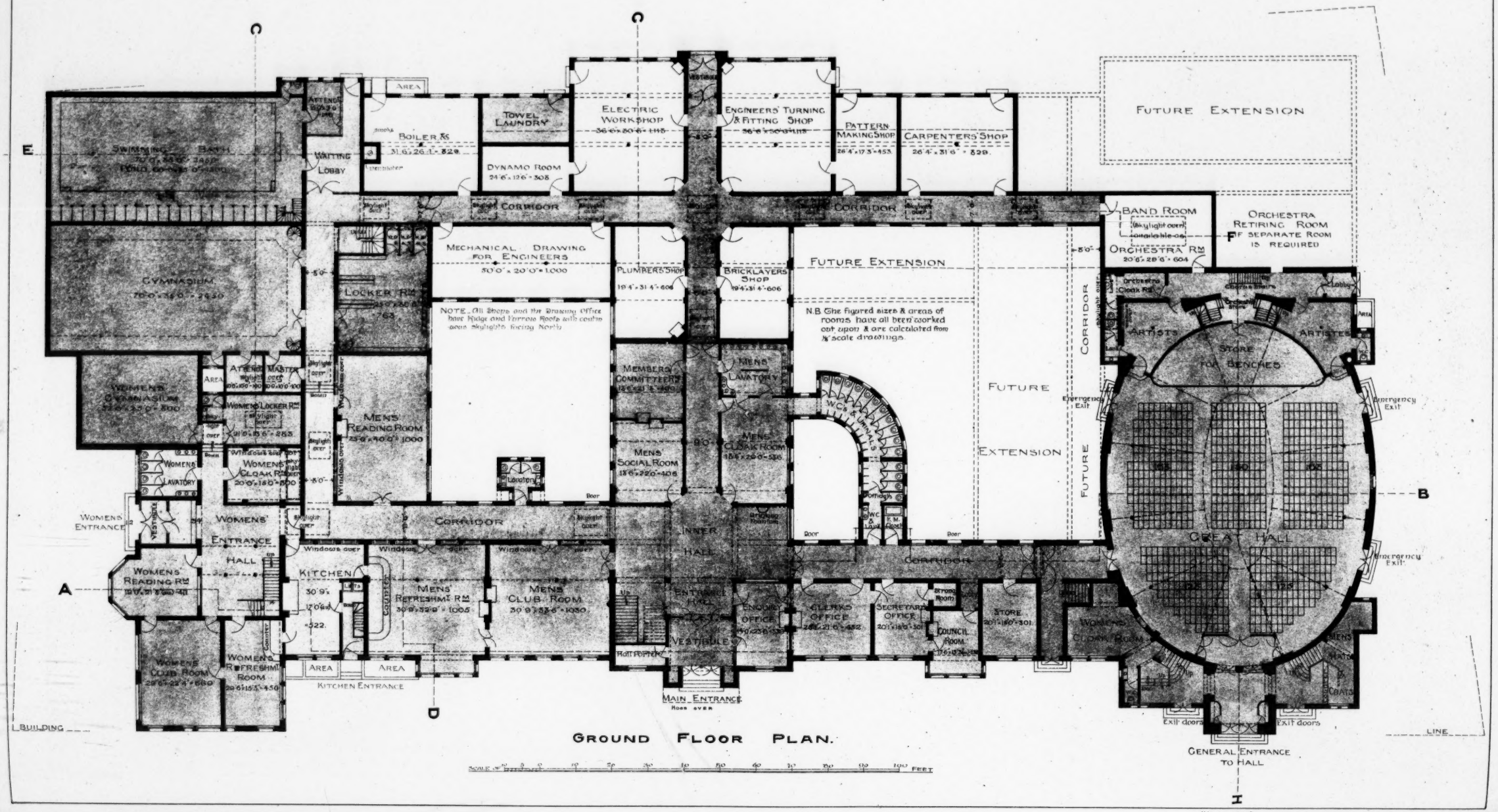
COMPETITION DESIGN SUBMITTED BY MESSRS. ROGER SMITH & GALE.

BATTERSEA POLYTECHNIC INSTITUTE.

FINAL COMPETITION.

DESIGN SUBMITTED BY MESSRS. ROGER SMITH & GALE.



GROUND FLOOR PLAN.

SCALE 0 5 10 20 30 40 50 60 70 80 90 100 FEET

"INK-PHOTO," SPRAGUE & Co., 22, MARTINS LANE, CANNON ST. LONDON, E.C.

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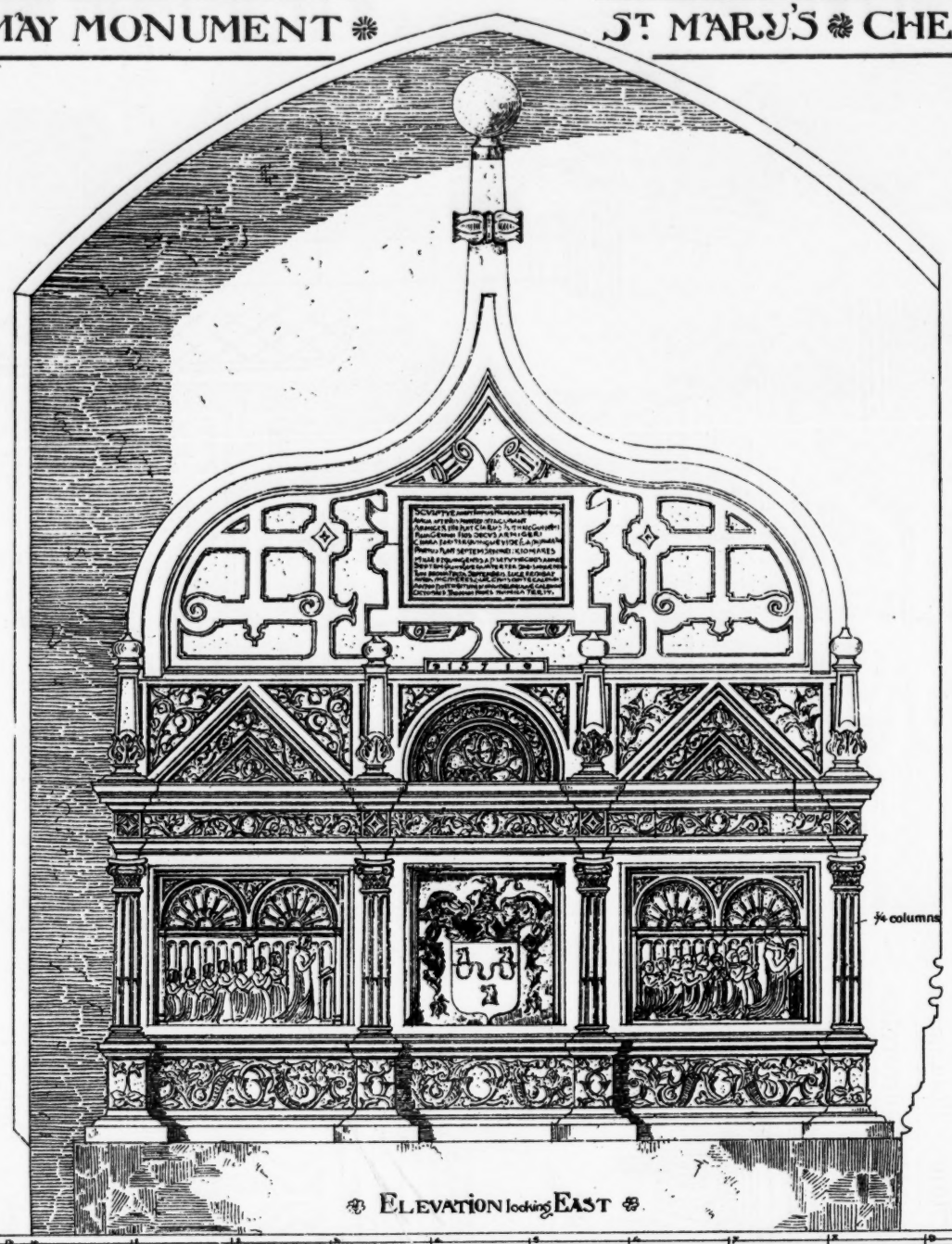
THE GENERAL DESIGN BY M. AMBROISE BAUDRY; THE BUST BY M. PAUL DUBOIS;
THE FIGURES BY M. MERCIÉ.

THE MILDMAY MONUMENT ST MARY'S CHELMSFORD



ELEVATION NORTH

ELEVATION looking EAST

ELEVATION SOUTH

Scale of Feet.

Fred. Oliphant Measured

PHOTO-LITHO. SPRAGUE & Co. 22, MARTINS LANE, CANNON ST. LONDON, E.C.

The Waldegrave Monument

Boxley Church

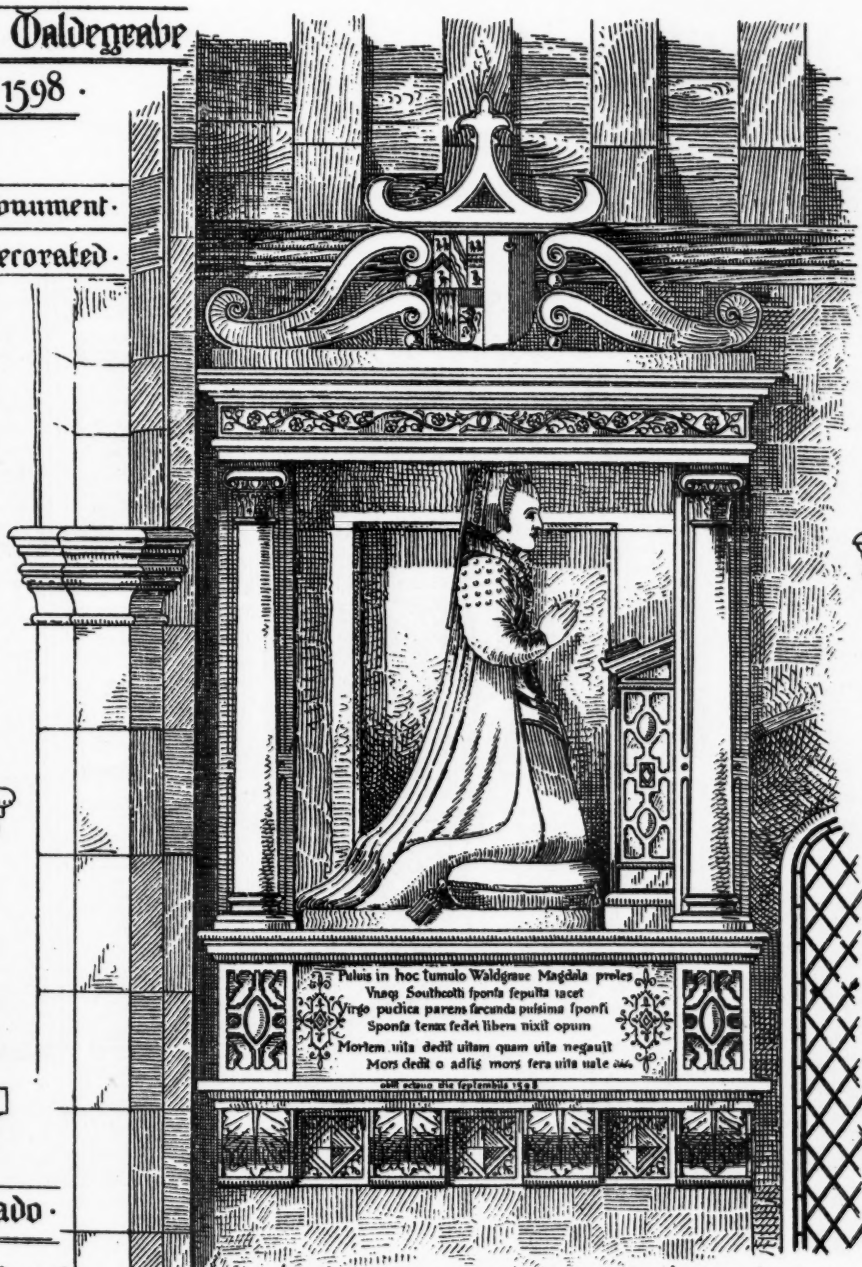
Magdalen Waldegrave
died 1598

Stone Monument
richly decorated

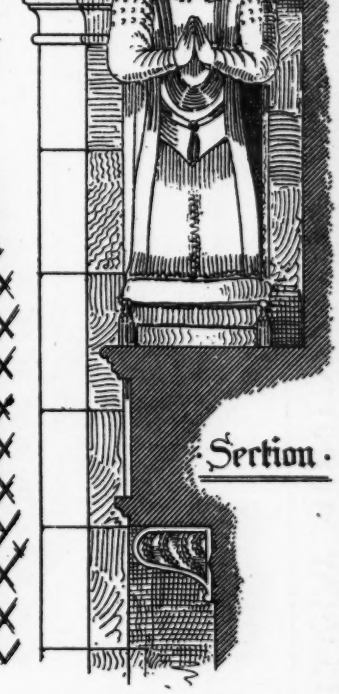
Cap

Base & Dado

Scale for Details

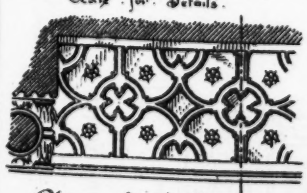

Pulvis in hoc tumulo Waldgraue Magdala proles
Vnaq; Southcotti sponsa sepulta iacet
Virgo pudica parens fecunda pulsima sponsi
Sponsa tenax fedei libera nixit opum
Mortem vita dedit vitam quam vita negauit
Mors dedit o adsis mors fera vita vale &c.
obiit octauo die Septembris 1598

Elevation on N. wall of Chancel

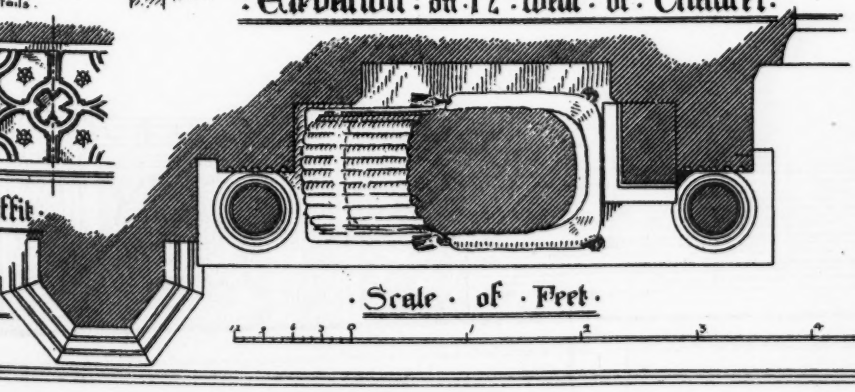


Section

Shield on top



Plan of Soffit



Plan of Slab

Scale of Feet

0 1 2 3 4 5 6

Frank Brown

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